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Report of a Preservation Needs Assessment

University Archives & Special Collections, Joseph P. Healey Library
University of Massachusetts Boston
Boston, MA
September 19, 2018

Submitted on January 9, 2018 by:

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Executive Summary

On September 19, 2018, paper-based, audiovisual, and photographic materials housed in the University Archives and Special Collections of the Joseph P. Healey Library, University of Massachusetts Boston were assessed for preservation planning purposes by Sean Ferguson, Preservation Specialist for the Northeast Document Conservation Center (NEDCC) in Andover, MA. University of Massachusetts Boston graduate student Kristine Malpica shadowed the site visit. The assessment evaluated the building and environment as they relate to the preservation needs of the materials; examined current policies, storage, and handling procedures; and assessed the general condition of materials. Observations and recommendations are based on a pre-site visit questionnaire, a full-day site visit, and discussions with Archival Collections Project Manager Patricia Bruttomesso, Interim University Archivist and Curator of Special Collections Andrew Elder, Processing Archivist Meghan Bailey, Reference Archivist Jessica Holden, and Interim Dean of University Libraries Joanne Riley.

The University Archives and Special Collections (UASC) was established in 1981, after the 1964 establishment of the University. Initially, materials consisted of Special Collections, and University archival materials were not regularly collected. During this time, a focus on social movements and urban society developed and continues to grow today. In 2010, Joanne Riley's tenure brought an inclusion of collecting historical University records into the mission of the UASC; current staff continues the effort to collect the historical records produced by the University. The current Library building was constructed in 1974. Collections in the UASC are accessible to the public Monday – Friday, 10:00am to 4:00pm. Materials ranging from 17th century bound volumes to late 20th century University records and hip-hop recordings convey the breadth of UASC collections and are stored primarily in three areas, including the Vault and additional rooms on the fifth floor, as well as a large space on the eighth floor.

Mr. Elder serves as the head of the department with primary responsibilities in managing staff, finances, and acquisitions. Ms. Bruttomesso manages projects – including this assessment – and handles the physical control of collections and facilities, as well as accessions. Primary processing functions for the collections are carried out by Ms. Bailey, and Ms. Holden provides access to the collections through reference services. Public History & Community Archives Program Manager Carolyn Goldstein also serves in the department, primarily managing University of Massachusetts Boston's community-scanning program Mass. Memories Road Show.

A number of preservation activities are currently underway and should be continued. These include:

- Effective use of archival quality protective enclosures for historical materials, including bound volumes, photographs, AV material, and documents;
- The installation of a climate-controlled storage space in 2014, coupled with the process of prioritizing vulnerable and historically significant materials for the space;
- The receipt of an environmental monitoring assessment from the Massachusetts Board of Library Commissioners in 2014;
- Hosting of a National Digital Stewardship Residency (NDSR) Resident to develop preliminary digital preservation workflows for the Mass. Memories Road Show collection in 2016-2017;
- Monitoring of the vault with the use of PEM2 data loggers and eClimate Notebook, as well as efforts to improve detected temperature and humidity conditions through cooperation with the Facilities Department;
- Efforts to improve disaster preparedness through contact with recovery vendors Belfor, Polygon, and BMS Cat and work on a disaster plan;

- The development of isolated areas for new accessions and materials with mold;
- A track record of committing staff time to preservation activities and the development of policies; and
- Ensuring the full monitoring of collections being accessed by researchers.

The UASC is encouraged to continue these practices, which are detailed in the report. Recommendations for short-, mid-, and long-term activities are listed in the appendices. In order to best care for the collections, actions in the foreseeable future should focus on activities that provide the broadest benefit to all collections, rather than actions that only affect a small number of items.

University Archives and Special Collections staff is aware of the preservation challenges presented by the collections and has shown a commitment to improving the storage and handling of the collections. The decision to pursue a general preservation assessment attests to an interest in improving care and handling practices to ensure that collection materials are available into the future.

As UASC staff continues efforts to preserve and maintain these unique collections, they face several challenges, including:

- Lack of staff and staff time for core archival functions such as preservation actions, processing, and reference;
- Lack of policies to guide, document, and build upon the generally well-made decisions regarding collection development, exhibition, disaster preparedness, digitization, and conservation;
- Dangerous environmental conditions, even in the temperature and humidity controlled Vault;
- A growing collection that creates space and processing concerns; and
- An uncertain future regarding the location of storage spaces.

With these challenges in mind, efforts over the next several years should focus on:

- Creating a plan to increase the number of staff and total staff time for core UASC functions, especially preservation, processing, and reference;
- Coordination with UASC staff to develop policies that underpin and develop the decision areas outlined in the above set of bullets;
- Further developing the environment management program through advocacy, grant-writing, and planning to adopt best practices for sustainability;
- Communication with UASC stakeholders and supporters conveying the need to address UASC's developing needs through growth and improvement of storage conditions.

Certainly few, if any, institutions have sufficient resources to address *all* of the preservation needs of *all* of their collections. Limited resources require choices to be made among activities, the cumulative result of which will have a greater impact if guided by a long-range preservation plan. Preparation of such a plan should be the next step for the UASC. The plan should be reviewed annually, and modified as preservation needs are addressed and new ones identified.

UASC Staff shows a clear enthusiasm and skill for preservation planning and implementation. Still, acting on the recommendations outlined in this report while balancing other duties can be difficult. A completed preservation plan will help to guide staff time and the institutional resources to activities that will have the greatest overall impact on preservation for the entire collection.

It should be reiterated that the work UASC staff has done so far should be commended, and ultimately it is the lack of staff time that holds the UASC back the most from the growth it is ready to make. This was made clear by UASC receiving more requests for instructional sessions than could be accepted and receiving more collections than could be processed both due to a lack of staff time. Furthermore, the lack of a fully functioning HVAC system also hinders UASC's growth, preservation practices, and potential for developing cost-saving measures. These limitations and the recommendations to overcome them are outlined this report, and will form a critical part of the preservation plan.

I am glad to have had the opportunity to work with Ms. Bruttomesso and her colleagues on this project. It was a pleasure to spend time with everyone at University of Massachusetts Boston and to learn more about the UASC's collections. If this report has raised any questions, or if I can provide any additional information, please do not hesitate to contact me.

Respectfully submitted,

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January 9, 2018

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I. Introduction

University of Massachusetts Boston, University Archives and Special Collections

The University Archives and Special Collections (UASC) was established in 1981, after the 1964 establishment of the University. Initially, materials consisted of Special Collections, and University archival materials were not regularly collected. During this time, a focus on social movements and urban society developed and continues to grow today. In 2010, Joanne Riley's tenure brought an inclusion of collecting historical University records into the mission of the UASC; current staff continues the effort to collect the historical records produced by the University. The current Library building was constructed in 1974. Collections in the UASC are accessible to the public Monday – Friday, 10:00am to 4:00pm. Materials ranging from 17th century bound volumes to late 20th century University records and hip-hop recordings convey the breadth of UASC collections and are stored primarily in three areas, including the Vault and additional rooms on the fifth floor as well as a large space on the eighth floor.

Mr. Elder serves as the head of the department with primary responsibilities in managing staff, finances, and acquisitions. Ms. Bruttomesso manages projects – including this assessment – and handles the physical control of collections and facilities as well as accessions. Primary processing functions for the collections are carried out by Ms. Bailey, and Ms. Holden provides access to the collections through reference services. Public History & Community Archives Program Manager Carolyn Goldstein also serves in the department, primarily managing University of Massachusetts Boston's community scanning program Mass. Memories Road Show.

Based on observations made during the site visit and an inventory provided by Ms. Bruttomesso, paper-based materials of the collections include 5,000 general bound volumes, 1,000 rare books, 114 linear feet of serial runs, 12,000 linear feet of documents and manuscripts, and an unidentified number of maps and plans. Photographic materials include 100 linear feet of prints, 20 linear feet of negatives, and 25 linear feet of slides. There are also 14,500 audiovisual objects and 50 works of art on paper. These varied formats tell the stories of Boston, Dorchester, surrounding islands, and important thematic topics including social movements, urban life, and the development of University of Massachusetts Boston.

Priority collections as outlined by the pre-site visit questionnaire currently include:

- University of Massachusetts Boston records,
- Thompson Island Collection, 1814-1990,
- Massachusetts Catholic Order of Foresters, and
- Collections covering:
    - Boston school desegregation,
    - The history of bicycling,
    - Urban planning, and
    - Social welfare

The goal of the UASC collections is to support the University and serve students and members of the public by collecting and providing access to historical materials and records relevant to the University, local communities, and topical areas of unique interest to UASC, including social movements, urban planning and life, and the social consequences of war. As the collection is processed and preserved and access improves, it will be even better utilized by the University community and beyond.

During the assessment, staff was asked what they would like to see for UASC five years from the time of this assessment. Staff indicated that they would like more staff serving the core functions for the department such as processing and reference, and dedicated storage spaces separated from staff work areas. Additionally, staff was interested in having a fully functioning HVAC system, and these goals align closely with the needs and recommendations identified in this assessment.

The Preservation Needs Assessment

Process

Paper-based, audiovisual and photographic materials housed at UASC were assessed for preservation planning purposes on September 19, 2018 by Sean Ferguson, Preservation Specialist for the Northeast Document Conservation Center (NEDCC), based in Andover, MA. University of Massachusetts Boston graduate student Kristine Malpica shadowed the site visit. The assessment evaluated the buildings and environments as they relate to the preservation needs of the materials; examined current policies, storage, and handling procedures; and assessed the general condition of materials. Observations and recommendations are based on a pre-site visit questionnaire, a full-day site visit, and discussions with Archival Collections Project Manager Patricia Bruttomesso, Interim University Archivist and Curator of Special Collections Andrew Elder, Processing Archivist Meghan Bailey, Reference Archivist Jessica Holden, and Interim Dean of University of Libraries Joanne Riley.

Two concepts are necessary for evaluating the adequacy of preservation in any library or archives:

> *Responsible custody* describes "a level of environmental control, housing, care and maintenance that will retard further chemical deterioration and protect materials from physical damage."[1] These preventive measures include climate management, protective enclosures, fire detection and suppression, effective security, disaster planning, and training staff and users to handle and care for the collection appropriately.
>
> *Optimal Storage* is defined as meeting or exceeding the guidelines proposed by professional organizations and national standards-setting organizations. Such guidelines and standards are authored by committees made up of professionals in the field, and they are informed by recent scientific research into the deterioration of collections. The challenge for standards-setting organizations (and for collections-holding institutions) is to translate scientific findings into practical and affordable recommendations for storage. In many cases, optimal storage may not be achievable, but institutions should be aware of the ideal as they work towards providing the best conditions possible.

As part of responsible custody, improving storage conditions for collections of long-term value to the institution provides the best overall protection for all collections; however, reaching optimal conditions requires long-term planning and resource investment. **Achieving the best possible environment that is sustainable[2] for your institution should be an ongoing effort and a long-term goal.**

[1] Commission on Preservation and Access. 1993. *The preservation of archival materials. Report of the task forces on archival selection to the Commission on Preservation and Access*. Washington, D.C.: Commission on Preservation and Access. http://www.clir.org/pubs/reports/arcrept

[2] Rochester Institute of Technology. 2012. *IPI's guide to sustainable preservation practices for managing storage environments*. Rochester, N.Y.: Image Permanence Institute, Rochester Institute of Technology. https://www.imagepermanenceinstitute.org/store/publications/sustainable-preservation-practices-guidebook

Report
This report is intended for continuing reference for this institution and its staff. Observations are preceded by best-practice information for each of the topics addressed. Many of the practices described may already be familiar, but they are included here to provide context for the recommendations that follow. Recommendations are bulleted and in bold type. For additional best-practice information, reference will be made to leaflets available in the *Preservation Leaflets* section of NEDCC's website (www.nedcc.org), as well as to resources that best describe various aspects of each section. Referenced leaflets and resources for more information can be found in the endnotes and appendices.

Throughout the report, the word 'staff' is used to indicate anyone responsible for collections care, whether they be professional staff, interns, volunteers, or some combination thereof. Staff is likely to change over time, but this report can be used for several years as a roadmap to priorities, and a foundation on which to build a preservation program and specific goals. Over time, as collections evolve and buildings age, and preservation projects are accomplished, another assessment may be required to identify new priorities.

Archival and preservation supplies are recommended throughout the report. Most of these supplies are available from multiple vendors, and staff should select the one that best meets their needs in terms of cost, shipment method, etc. Examples of particular items are intended as illustrations, not recommendations of one supplier over another. A list of the resources, reference material, and supplies included throughout this report is collated and made available in the Appendices at the end of this document, along with an implementation worksheet and an example preservation plan.

II. Collection Management & Preservation Planning

The most basic requirement for successful preservation planning is local commitment. An effective preservation program requires effort and involves some expense—for space, environmental control, storage supplies and equipment, and/or other strategies. Everyone in the organization must be willing to find the time and at least some money to undertake preservation activities.

A. Preservation Planning

Effective preservation planning[3] requires that an institution prioritize its various collections for preservation. This process—called "selection for preservation"—takes into account the resources available for preservation activities, as well as the condition, current or anticipated use, and relative value of materials to be preserved. Every institution with records of enduring value should have a preservation plan that weighs the needs of the collections against resources and provides a list of priority preservation actions.

This preservation assessment report may be viewed as the first step in creating a preservation plan, but it is not itself a plan. This report identifies preservation needs and provides an appendix that offers some guidance in prioritizing these needs; however, it cannot take into consideration many other factors that must be considered when balancing the needs of collections against institutional resources.

There is general consensus regarding the factors to be considered when prioritizing potential preservation actions:

- **Use** - materials that are used frequently, whether by staff or researchers, may be at higher risk than other collections.
- **Storage** - collections that are stored under adverse conditions, whether in an unstable environment or in damaging enclosures, may require prompt preservation action.
- **Condition** - items or collections in fragile condition may be at risk of loss unless they receive attention quickly.
- **Value** - either absolute value (rarity, monetary worth, intrinsic or associational value, etc.) and/or relative value of collections to an institution may influence preservation priorities. Whether collections have long- or short-term value to an institution will influence decision-making.
- **Format**[4] - whether or not materials need to be preserved in their original format will also influence priorities.

In general, preservation activities may be compared using the following criteria:

- **Impact** - those actions that will result in dramatic improvement or that will affect the greatest number of items will often be the highest priority (for example, improving climate control, rehousing a collection, or reformatting fragile materials).
- **Feasibility** - this factor is essential; it includes staffing levels and expertise, financial considerations (outside funding, capital outlay, operating costs, expenses for materials and services), policy and

[3] Foot, Mirjam. 2001. *Building a preservation policy.* Rev. ed. London: Preservation Advisory Centre, British Library. http://www.bl.uk/aboutus/stratpolprog/collectioncare/publications/booklets/building_a_preservation_policy.pdf

[4] University of Illinois at Urbana-Champaign. 2014. "Preservation Self-Assessment Program format ID guide. https://psap.library.illinois.edu/format-id-guide

procedural changes required, and political considerations. Even if the impact of a preservation action is high, it may be given a low priority if implementation is not feasible.
- **Urgency** - there will always be some activities that require immediate action; collections may be damaged or lost, or an opportunity to act on a particular project may be lost, if action is not taken.

Some factors change as institutional circumstances change; these include available funding for preservation, staff time and expertise, and user demand for collections. Others require an in-depth understanding of the institution and its collections that only the staff possess, such as organizational priorities and the relative value of collections.

Observations & Recommendations

The preservation plan that this report will help UASC create will be the first of its kind for the Archives, and there are several reasons to suggest that UASC will be well prepared to create this plan. Most importantly, UASC staff demonstrates a history of collecting data and identifying needs to inform preservation decisions. This was the case when staff received an environmental monitoring report from the Massachusetts Board of Library Commissioners (MBLC) in 2014. This report quantified the high temperature and humidity levels found in the collections, allowing UASC staff to begin planning for an HVAC-supported Vault that would protect the repository's most vulnerable collections. This project specifically will be addressed in Section III. B. Temperature, Relative Humidity (RH), & Air Quality. UASC also hosted a Resident from the National Digital Stewardship Residency (NDSR) program in 2016-2017 to develop preliminary digital preservation workflows for their Mass. Memories Road Show collection. UASC is well familiar with the process of working with third party organizations to identify and accomplish preservation goals.

- **Use the recommendations in this report to prepare a long-range preservation plan for the UASC collections**. The preservation plan should be a written document that is used for both short- and long-term planning and include budget estimates, human resource needs, and timelines for each project. Preparation of a plan should begin as soon as possible, but such an effort will take time.
    - A good resource is the British Library's *Building a Preservation Policy*: http://www.bl.uk/aboutus/stratpolprog/collectioncare/publications/booklets/building_a_preservation_policy.pdf.
- **Establish a schedule for updating the preservation plan**. The preservation plan should be considered a living document, and revisited annually. Periodic revision will be needed as circumstances change, and as preservation needs are addressed and new ones are identified.
    - As an eventual move is of the collections is possible, any updates in the identification and preparation of a new space for the archives will impact the plan as it evolves.

B. Mission Statement & Collection Policies

A thorough awareness and articulation of institutional goals and objectives for a collection as a whole—what the organization wishes to document, who it wishes to serve, and what types of material it will collect to accomplish those goals—provides the underpinning for all preservation actions. This broad understanding provides context to support preservation decision-making, and it should be articulated in the institution's mission statement and the set of policies for collection management.

Collection management practices have a direct impact on preservation, and committing them to writing serves to document institutional knowledge and helps ensure consistent practice over time. By stating a

collecting focus and providing guidelines for acquisition and deaccession, a collection management policy guides the growth of a collection and ensures that an institution spends its resources on acquiring—and preserving—only materials that serve its mission. Specific, written requirements for access are useful to staff and researchers alike, and they strengthen the security of collection materials.

While a mission statement and a collection development policy are integral to defining an organization's goals and setting out collecting parameters, once these are in place there are a range of policies that can be prepared to further document practices, guide activities, and establish expectations for staff, researchers, and patrons. These are just a few examples of policies that may be desirable:

- Handling Guidelines
- Guidelines for Accession and Deaccession
- Access and Use Policy
- Security Guidelines
- Loan/Exhibit Policy

Observations & Recommendations

The mission statement of the UASC is as follows:

The mission and history of the University of Massachusetts Boston guide the collection policies of University Archives & Special Collections, with the university's urban mission and strong support of community service reflected in the records of and related to urban planning, social welfare, social action, alternative movements, community organizations, war and social consequences, and local history related to neighboring communities.

This is a strong mission statement, clearly identifying UASC's purpose, subject focus, and relationship with the University. This mission has not changed greatly since the 1980s and could benefit from a review. There may be room for this mission statement to develop further. At present, the mission does not state UASC's audience, and based on the site visit, it is clear the UASC serves the public, UMass students, and faculty. Additionally, UASC continues to develop a focus on collecting the history of the University, and explicitly stating this may be beneficial to UASC. It was also discussed that the mission statement may have been approved by the University administration in the 1980s, but it has not received re-approval since that time.

The collecting practices of UASC have grown organically since the founding of the University. Initially focused on special collections, UASC collected materials relating to social welfare, urban planning, and community organizations early and continues to do so today. Eventually UASC began to also collect materials that tell the story of Dorchester and the Boston Harbor Islands. Recently, UASC has also begun to collect the historical records of the University, and it is possible that not every department or faculty member in the University is aware of this. This is evidenced by the discovery in 2014 of many University records stockpiled in a separate part of the campus, which had never been transferred to the Archives.

UASC has not always accepted the donations offered to it. For example, while it temporarily accepted the records of the Roxbury Historical Society on deposit, it helped arrange for the transfer of these materials to Northeastern University whose collecting focus more closely aligned with the Roxbury area. Smart collecting decisions such as this will need to continue to manage the growing collections at UASC, especially considering the organization's restrictive space needs. It should be noted that these decisions were made without the support of a formal collection development policy.

The experience with Roxbury Historical Society speaks to a larger trend at UASC. Overall, UASC staff has made good collection development and preservation decisions. However, staff would greatly benefit from documenting these decisions into a formal set of policies, which can be relied upon when defending choices made by staff and built upon as practices develop. The fact that UASC has a history of making good collection development and preservation decisions puts staff in a strong position to write these policies.

UASC also maintains policies, forms, and workflows that facilitate the management of collections by staff. These include documented processing and accession workflows, a deed of gift, an appraisal form, incoming and outgoing loan receipt forms, as well as a letter template appropriate for certain deaccessions. The accession workflow is excellently detailed, containing 27 steps and assigning tasks to every member of the department. The UASC Processing Manual is a major achievement for UASC staff as well and will be discussed in more detail in following sections.

Additionally, UASC staff has implemented forms and policies relevant to researcher access and use of collections. Notable examples of these include an "Application and Rules of Use for Archival Materials" form for incoming researchers to read, sign, and fill out and a "Permission to Publish" form that outlines requirements for researchers using UASC materials in publications. A "Reproduction Policies and Fees" document also outlines rules regarding UASC scanning services. Other forms relate to specific collections, such as a form for the Massachusetts Society for the Prevention of Cruelty to Children (MSPCC) Records. These indicate UASC staff's robust understanding of how formalize and document access to collections. Policies as they relate to care and handling are further discussed in Section IV. D. Handling Policies & Practices.

UASC staff has also developed a policy for use of its exhibit space for eligible exhibitors titled "Healey Library's Grossmann Gallery Rules of Use." This policy is further discussed in Section V. C. Exhibition.

- **Review the mission statement.** UASC staff has depended upon – and developed - a strong mission statement for the UASC. The current mission statement addresses many of the necessary components, but there are opportunities to strengthen it ever further. For instance, it does not address UASC's audience and could more explicitly state its role in collecting University records.

    - When reviewing the mission statement, it will be helpful to consult the missions of other similar institutions. The University of Denver Special Collections and Archives Mission Statement (https://library.du.edu/collections-archives/specialcollections/missionstatement.html) and the University of Connecticut Archives and Special Collections (https://lib.uconn.edu/libraries/asc/about/) may serve as helpful examples.

- **Begin drafting a collection development policy.** The policy should address, to some extent, all key elements for historic collections, including the mission of the archives and special collections, the focus of the collection (including geographic area and subject), legal transfer of ownership (gifts and loans), unwanted materials, and cooperative agreements. Staff may wish to address specific formats that will or will not be accepted, and any preferences when accepting particular formats. Staff may also choose to address procedures for purchase of additions to the collection.

    - For information on additional policy elements, the Wisconsin Historical Records Advisory Board's "Creating a Collection Development Policy for Local Historical Records in Public Libraries," is an excellent resource even if it is geared towards to the public library sector: https://www.wisconsinhistory.org/pdfs/la/LIB-WHRAB-Records-Policy-Libraries-WAPL.pdf.

- **Establish a routine schedule for reviewing and updating UASC policies and workflows.** These documents provide a structure for collecting decisions, but should not be a static document. Regular review and amendments ensure that the mission and collection development policies remain relevant over time.

- **Seek approval from administration for the mission statement and collection development policies.** Receiving approval from important University stakeholders such as the Library Director will help to create awareness and buy-in for UASC's services.

- **Share the collecting policy with the University**. The policy can be used as an educational tool and can provide support for collecting decisions. This will help departments interested in preserving their records make informed decisions regarding which materials they send to UASC.

- **Prioritize the development of future policies based on the needs of the UASC and the time its staff has.** Additional policies relating to selection for digitization, security, and exhibiting UASC materials are all important areas the UASC can develop as time allows.

    - Refining current policies and developing future ones should be done after reviewing examples of similar institutions and consulting guides from national organizations.

C. Staffing and Budget

Adequate staffing is crucial to preserving collections. Some preservation projects, such as shelf cleaning and disaster planning, do not require an investment in equipment or supplies, but do require a commitment of time. To plan and coordinate these activities and other, more collection-specific projects, someone on staff should be assigned responsibility for managing preservation—including maintaining up-to-date knowledge of preservation best practices, maintaining an understanding of the current preservation needs of the collections, and making preservation decisions based on this information. Ongoing professional development alongside participation in local, regional, and national conversations about collections care should be a goal for any staff engaged in managing preservation.

Preservation management requires a dependable budget with active administrative coordination and at least a small amount of money for supplies, training, and equipment. To ensure a lasting commitment to preservation and allow better tracking of expenses, a budget line for preservation should be part of a collecting institution's annual budget. A budget line item ensures that many day-to-day projects and activities are recognized as part of the larger organizational operations.

If an important project is identified but funding is not available internally, consider the many grants and other funding opportunities available locally and nationally to support preservation activities. Understanding and clearly identifying the goals and outcomes of the project will help in matching with potential funders.

Observations & Recommendations

At present, five staff members are responsible for activities in UASC. Interim University Archivist and Curator of Special Collections Andrew Elder is responsible for managing the UASC staff and budget; he also manages acquisitions. Archival Collections Project Manager Patricia Bruttomesso works to ensure the physical control of collections, manage accessioning, plan for disaster, and monitor and manage facilities. Processing Archivist Meghan Bailey is responsible for arranging, describing, and enclosing collections and develops exhibits. Reference Archivist Jessica Holden manages the provision of access to collections, and

Public History & Community Archives Program Manager Carolyn Goldstein in exhibit development and reference.

These staff members are supported by three student workers. These include a Reference Student Worker who works at the reference desk, and two Processing Student Workers, one who works at the reference desk and in processing and one who assists in the processing room. It was noted that hypothetically each staff member could work with a student worker. Based on discussions with Ms. Bruttomesso, Mr. Elder, and Ms. Riley, UMass Boston would be well equipped to offer an educational experience to a student worker in the field of preservation librarianship under Ms. Bruttomesso whose responsibilities and professional development experiences in IPM, disaster planning, security, and environmental control align closely with the preservation field.

Staff and Interim Dean of University Libraries Joanne Riley recognize that a lack of staff and staff time for UASC is one of the department's greatest obstacles, especially in regards to processing the department's backlog and providing safe access to collections. Indeed, staff of UASC described a feeling of needing to pull back and focus only on essential functions at UASC – such as processing and access - under the staffing shortage. It should be noted that aspects of the staffing situation are unlikely to change quickly given that the Library's and the University's staffing levels are currently in flux as the University works to overcome a number of financial setbacks.

Furthermore, future developments suggest that the department will only be under more strain to deliver its services and fulfill its functions given its current staffing capacity. During the site visit, Ms. Bailey indicated that her role in processing digital collections is expected to grow, and this will limit her time spent processing physical collections, which are arriving at a high rate. Additionally, as the UASC's profile continues to grow in the University, it is possible that more transfers will arrive from other departments. Finally, projects such as the development of a disaster plan, applying to future NEH grants, managing a student worker, and increasing responsibilities relating to environmental control will require more time from Ms. Bruttomesso than a part-time position will allow.

It was very encouraging to hear from Ms. Riley that she felt that UASC needed approximately three more staff members in the next three years. Indeed, UASC would benefit from expanding staff or staff time in the areas of preservation, access, and processing. Ms. Bruttomesso will need more time to fulfill the vital projects outlined in this report, while Ms. Bailey would benefit from support in the fields of processing physical collections and managing digital collections. The same can be said of Ms. Holden's work in providing access to collections, given the growing interest particularly in instruction sessions.

In regards to the budget, UASC has already established a budget line item to guide the allocation of funds to the needs of collections, and staff should be commended for this. At present, the budget includes $11,000 for preservation supplies, $4,500 for digitization, and $150 for environmental control software. The recommendations outlined in this report, including the selection of supplies for the archives, could make an increase in the budget for supplies necessary.

- **Expand the staff of the UASC.** With a growing collection, sizeable backlog, growing demands for reference services, and a need to care for digital collections, the workload of the UASC will not be sustainable at current staff levels, and in fact current staff levels are hindering growth. Expanding Ms. Bruttomesso's time to a full-time position and allocating more staff in the areas of digital preservation, processing, and reference would help to meet existing demands and help the UASC meet its full potential.

- The development of policies and procedures by UASC staff, including the accession and processing workflows, will help future additional staff during the onboarding process. This is yet another factor that makes UASC well positioned to add to its current staff levels.

- **Continue efforts to secure grants and other funding for high priority preservation projects.** The UASC has done well to secure the Preservation Assistance Grant for Smaller Institutions (PAG) required for this assessment. As priorities become clear, funding efforts can be focused on those actions that will have the largest impact.

    - NEH Preservation Assistance Grants are a good continuing option for funding a wide variety of smaller projects including emergency preparedness and disaster planning activities, environmental monitoring and consultation, improvement of storage furniture and purchase of supplies, training opportunities for staff, and conservation consulting.

    - The UASC may wish to investigate grant options listed on NEDCC's Funding Opportunities page: https://www.nedcc.org/free-resources/funding-opportunities/.

- **Expand the student worker program to include an individual to support Ms. Bruttomesso.** As described above, Ms. Bruttomesso's responsibilities and experience are such that a student worker would benefit greatly from working with her. Managing the preservation environment would prove to be a unique opportunity for a student worker, and the areas of preventative care that Ms. Bruttomesso manages, including physical control, the environment, accessions, collections review, and disaster planning are areas that require a great deal of time.

    - For guidance on student worker and internship opportunities, refer to *Archival Internships: A Guide for Faculty, Supervisors, and Students,* available from the SAA bookstore here: http://saa.archivists.org/store/archival-internships-a-guide-for-faculty-supervisors-and-students/774/.

- **Based on the recommendations on this report, increase the preservation budget line for the UASC.** Increased funding will be needed for upgraded supplies, special projects, vendor services, and training.

D. Intellectual Control

Intellectual control helps staff and researchers to identify and locate potentially relevant materials. It is inextricably linked to physical control – the recordkeeping, retrieval, and shelving practices that ensure that materials are where they are supposed to be. Intellectual control may be achieved through the creation of catalogs, inventories, finding aids, and other descriptive guides. These descriptive tools not only facilitate access, they can also support preservation in several ways:

- They decrease the risk of theft by providing documentation of ownership.
- They prevent damage and disorder caused by rummaging through boxes and documents in archival or historic collections.
- They help to maintain intellectual links between materials that may be physically separated for preservation purposes (e.g., papers separated from cased photographs). Preservation needs vary by format, and to meet these needs, items from the same collection may be physically separated and placed on different shelves, in different rooms, or even in different buildings. Good intellectual control and well-written descriptive guides allow staff to meet varied preservation needs while maintaining the conceptual idea of a collection and providing the information required to find separated items.

- In the context of disaster recovery, they are invaluable in helping staff to determine which materials, if any, have been damaged or destroyed.

Cataloging practices for published books differ substantially from cataloging practices for archival materials (e.g., documents, photographs, scrapbooks, etc.). Where published books are cataloged individually, archival materials are usually cataloged ("arranged and described") in groups. Finding aids are the primary means of describing archival collections, but there are many ways of arranging these materials, and the method best suited to one group of records may not work for another. The ultimate approach to organization should promote access, both by expediting availability of the collections for research and by providing a reasonable means of identifying relevant sets of records.[5]

Many standards, best practices, and guiding documents exist to assist in describing and organizing different types of collections, and even different formats. Regardless of how intellectual control is achieved, at a minimum the organization should know the legal ownership of collections, the formats and quantities represented, and the physical locations of materials.

Observations & Recommendations

UASC staff follows best practices for ensuring intellectual control over archival and special collections and have made strides in developing practices to address their backlog and determine the preservation needs of collections. These practices are indicative of a very capable department.

Approximately 50% of UASC collections have been processed and received finding aids, and at the time of the site visit, the backlog was approximately 3,200 linear feet. Ms. Bailey calculated that the UASC would be able to process this backlog in 13 years given their current rate of annually processing 250 linear feet if no new accessions were made. Of course, UASC does not plan to stop accessioning historical materials.

Processing and accession practices at UASC are supported by a thoughtfully-crafted array of workflows, forms, and policies. UASC currently uses Processing Manual for Archival and Manuscript Collections Version 1.4 published in February 2017, a guide developed by Ms. Bailey and Ms. Holden under the supervision of Ms. Riley. As stated in the manual, Ms. Bailey and Ms. Holden have contributed the updates to the document. The processing manual does an excellent job outlining practices relating to separating formats, discarding certain materials, and handling moldy materials. The separation form is a particularly effective feature for ensuing intellectual control when separate storage conditions are needed for materials.

Recently, Ms. Bailey has taken steps to accelerate processing procedures, and this includes incorporating an approach called extreme processing Ms. Bailey developed. Using a matrix including size, level of difficulty, and projected interest, Ms. Bailey establishes prioritizes, which allow her to assign collections effectively to student workers and herself. While collections wait to be processed, Ms. Bruttomesso applies a minimal amount of stabilization to collections, providing them with appropriate housing.

Identifying condition is an integral part of UASC processing practices, which is good. Ms. Bruttomesso assesses materials in a separate room before they are transferred to storage, and this information is recorded. When active mold is identified, the materials are enclosed in bags and placed in a separate area on the 5th floor. UASC is currently conducting a shelf read of bound volumes, and guidance relating to the information collected for this shelf read was provided separate to the assessment in an email to Ms. Bruttomesso.

[5] Greene, Mark A., and Dennis E. Meissner. 2005. "More product, less process: revamping traditional archival processing". *American Archivist*. 68 (2). http://www.archivists.org/prof-education/pre-readings/IMPLP/AA68.2.MeissnerGreene.pdf

UASC would benefit from improving the platform upon which descriptive information is kept. Currently, staff makes use of an Access Database, which has been useful to UASC staff in the past. As the number of collections continues to grow, a dedicated collection management system could further improve efficiency and be more sustainable over time given the ongoing technical support online communities and vendors provide for dedicated collection management systems. Staff has already begun to investigate ArchivesSpace, which could be a suitable tool for UASC.

As mentioned previously, UASC has a very strong understanding of provenance and ensuring custody as evidenced by the use of Deed of Gifts and accession records. Deaccession practices are slightly less developed; at present a letter template exists that informs donors of duplicate materials that have been deaccessioned and are ready for pickup or disposal. However, it is possible in the future that collections could be reappraised long after the accession has been processed, and that materials may be deaccessioned even though they are not duplicates. Given concerns regarding space, further developing deaccession practices should be a priority.

- **Review the Processing Manual for Archival and Manuscript Collections.** UASC staff has developed a very useful guide for processing collections, and the manual provides an ample amount of guidance relating to preservation. Below are two recommendations to further improve this already effective tool:

    - **Update the section on conservation:** The practice outlined in the Manual of flagging items potentially in need of treatment is a very good strategy for UASC. Ensuring this section includes a definition of "conservation" and "treatment," uses the word "conservator" as opposed to "conservationist," and includes a list of potential issues that may warrant flagging the material for conservation would help ensure all staff and student workers understand conservation and approach this part of the manual consistently.

        - The definitions listed on the American Institute for Conservation website for "conservation" and "treatment" may be particularly helpful to include in this section: http://www.conservation-us.org/about-conservation/definitions#.W88jSWhKiUk

    - **Include a section on distribution and review.** As evidenced by the version number (1.4) on the front cover and the statement of purpose stipulating that this manual is intended to guide new staff, it is clear that staff updates and shares the manual regularly. To promote consistency in these practices, UASC may wish to include a brief section establishing a scheduling for review on an annual and as-needed basis as well as a paragraph stating when the manual will be shared with new employees.

- **Further develop reappraisal and deaccessioning practices.** The Society of American Archivists has produced "Guidelines for Reappraisal and Deaccessioning" that may help guide reappraisal of collection materials. A PDF can be found at: http://www2.archivists.org/sites/all/files/GuidelinesForReappraisalAndDeaccessioning-May2012.pdf.

    - Formalizing reappraisal and deaccession practices will help to improve UASC's ability to weed collections and defend these decisions. These practices will prove particularly helpful in addressing space needs in the future.

- **Follow through with plans to identify and assess the adoption of a new collection management system.** In the past, the Access Database has been an important tool for UASC staff

as they navigate accessions and track collections. However, adopting a dedicated platform for managing archival collections would strengthen staff's intellectual control over collections and improve the sustainability of UASC procedures. Still, the adoption of a new platform will require time and effort on the part of staff. In conversations had on the day of the site visit, Ms. Bailey has already identified ArchivesSpace as a suitable candidate. Comparing this option with other platforms and evaluating the costs associated with adoption – both in terms of funds and time – will place UASC staff in a strong position to adopt a platform that meets their needs at a time that first their schedule.

- Below are two additional platforms to consider:

  CollectiveAccess: http://www.collectiveaccess.org/
  CollectionSpace: http://www.collectionspace.org/

III. Building and Environment

A well-maintained building provides the first line of defense for collections. Staff caring for historic collections within a larger organization (for example, staff of an archives housed within a library) will have to work closely with facilities and administration to ensure that the entire building envelope is monitored and maintained. This will protect circulating and non-circulating materials, as well as any other materials and services within the building. Temperature, humidity, and air quality are best controlled when monitored building-wide to determine how shifts in one area are affecting other areas. Because any disaster is likely to affect the building as a whole, having a comprehensive disaster plan that also addresses collections, along with staff cross-trained in disaster preparedness, will help ensure that all collections are cared for should the building flood, catch fire, or face other emergencies. Finally, maintaining a secure building requires the concerted efforts of all occupants.

A. The Building

The building is a collection's primary defense against the elements, making regular upkeep a foundational element of preservation. Unless the structure is sound, it cannot prevent the entrance of pests and intruders, support climate control, or protect records from fire, water, and other disasters. To ensure that their building fulfills these functions, institutions should provide regular preventive maintenance on a fixed calendar basis, with inspection of roof, gutters, skylights, flashings, and drains, and maintenance of any climate control, fire protection, and security systems. Keeping a log of building problems will preserve institutional knowledge about the building despite staff changes over time.

Observations & Recommendations

The UASC is housed in the Healey Library, which is an original structure of the Harbor Campus on Columbia Point. The Healey Library rests atop a two story, below-ground parking structure along with many of the original buildings on campus and was constructed in 1974. The Library is a 13-story building, and the UASC operates on the 5th floor and the 8th floor. The building has a history of maintenance issues going back to its construction when poorly designed government contracts led to issues with the buildings structure such as the falling of bricks off the Library façade and the deterioration of the parking substructure to the point it was closed to parking in 2006. Since then, repairs have been made to address some of these issues.

At present, the campus is in the middle of a 25-year Campus Master Plan, and construction is an everyday occurrence on Columbia Point. There are no plans to move the Library or significantly alter the building. However, UASC staff indicated that if grant money were acquired for a renovation project, this could be worked into construction activities across campus. Additionally, the building activity around campus, including demolition of the science building and its substructure, shared with Healey Library and several adjacent buildings, and possible movement of departments into the Library building make taking steps to prepare for renovation necessary. Information on renovation preparation is found in Section VI. Renovation.

Overall, UASC staff has done a great job working with facilities and reporting building issues. As indicated in the pre-site visit questionnaire, staff has kept a log of maintenance problems since May 2014 and conducts regular walkthroughs of the building. Ms. Bruttomesso is responsible for managing this log, and she and other UASC staff conduct the walkthroughs. Additionally, Ms. Bruttomesso reported a close working relationship with facilities personnel. There is still room for improvement, and this is in regards to deferred maintenance, an issues identified in the Campus Master Plan. While this is not an issue UASC can

address directly, staff can explore strategies to further improve efforts to generate interest in preventative maintenance in the building.

- **Use the building log to develop scheduled reports to be shared with UASC stakeholders such as administration and facilities.** By creating reports on a regular basis, UASC staff can use this information to communicate trends in persistent building issues as well as unintended consequences resulting from the ongoing construction on campus. This information may help increase the likelihood that the Library and University administration prioritize targeted preventative maintenance in the future. Because UASC already tracks a log of building issues, staff is well positioned to take this step.

B. Temperature, Relative Humidity (RH) & Air Quality

In the storage environment, temperature, relative humidity (RH), and air quality all play significant roles in determining the longevity of collections. Heat and moisture, along with air pollutants, act as catalysts for chemical, mechanical, and biological decay, making the rate at which materials age directly proportional to the conditions in which they are stored.

"An optimal preservation environment," states the Image Permanence Institute, "is one that achieves the best possible preservation of collections at the least possible consumption of energy, and is sustainable over time."[6]

Temperature and RH

Optimal storage conditions vary depending on the type of material. As a very general guideline, collections are best stored below 70°F, and at an RH of 30-50%. In recent years, though, conservation research has focused increasingly on the creation and maintenance of *sustainable* preservation environments. Where past recommendations called for strict regulation of temperature and RH (±2°F/±3%RH), current thinking is less prescriptive and takes into account material characteristics, environmental risks, current institutional capabilities, and available resources.

Temperature and relative humidity are inextricably related: as one changes, so will the other. Seasonal fluctuations resulting in extreme conditions—where materials are subjected to high temperature or RH for longer than a few weeks—hasten decay. Optimal storage requirements for books and paper are different from those for photographs (including still and moving-image film) and audiovisual media and, again, depend on the type of material (i.e., nitrate, acetate, polyester, magnetic tape, etc.).[7] The lower the temperature, the more slowly items will decay.

6

Rochester Institute of Technology. 2010. *Seminar reference workbook for sustainable preservation practices for managing storage environments*. Rochester, N.Y.: Image Permanence Institute, Rochester Institute of Technology. http://ipisustainability.org/pdfs/sustainability_workbook_connecticut.pdf

[7] Adelstein, Peter Z. 2004. *IPI media storage: quick reference*. Rochester, NY: Image Permanence Institute, Rochester Institute of Technology.www.imagepermanenceinstitute.org/webfm_send/301; National Film Preservation Foundation (U.S.). 2004. *The film preservation guide: the basics for archives, libraries, and museums*. San Francisco, Calif: National Film Preservation Foundation. www.filmpreservation.org/preservation-basics/the-film-preservation-guide

Likewise, the lower the RH (within the range of 30%-50%), the more slowly materials will age, but because RH fluctuations can have broader and more serious effects on collections, control of RH in particular should be a priority for every organization caring for collections. Besides accelerating chemical deterioration of collections, extreme seasonal RH fluctuations cause mechanical stress in paper as it absorbs and releases moisture in response to changing humidity levels in the surrounding environment. High RH causes image decay of film and photographs, discoloration of color film and photographs, and binder degradation in magnetic media. Moreover, humid environments put collections at risk of damage from mold (which can bloom where RH exceeds 60%), and they can be inviting to pests (e.g., silverfish) that feed on cellulose—the primary ingredient in paper. Very low RH levels (below 25%) can cause paper to become dry, brittle, and weak.

Just as different formats have different environmental needs, they also have different vulnerabilities: some are more sensitive to temperature and RH fluctuations than others. Ideal conditions necessarily vary from institution to institution, and will depend on four factors:

- the characteristics of the institution's highest priority materials;
- the environmental risks associated with those materials;
- the capacity of existing environmental controls; and
- institutional resources dedicated to operating climate control equipment.

Air Quality

Pollutants in the storage environment fall into two main categories: particulate and gaseous. Particulate matter such as dirt, dust, and fibers can stain and abrade collection materials. Gases such as sulfur dioxide and nitrogen dioxide, ozone, and peroxides catalyze chemical reactions that lead to acid formation in paper. Sulphur dioxide, which converts to sulfuric acid in the presence of moisture, causes red rot in leather bindings. Nitrogen dioxide and ozone cause fading and discoloration of photographs.

Exposure of collections to pollutants can be controlled by good building maintenance, routine housekeeping, and mechanical air filtration. Most HVAC systems now offer some level of particulate filtration. Gaseous pollutant filtration is also available; however, it requires a significant investment in equipment and maintenance. Following a regular schedule of cleaning or replacing filters will ensure that the system operates as intended. Other steps that can be taken to prevent exposure to pollutants include keeping exterior windows closed and housing materials in protective enclosures.

Observations & Recommendations

Issues with the temperature and humidity in storage spaces is a notable threat to the collections in the UASC and will need to be assessed further and resolved to preserve UASC's materials. At present, UASC collections are stored in a variety of areas in the 5th and 8th floor discussed in Section IV. A. Storage & Use Spaces. Collections in Room 05-07, Room 05-20, Room 08-13, and Room 08-10 are served by the air handling system that controls the temperature and humidity in the rest of the Library. Collections in Room 05-10C, also referred to as the Vault, are served by a Trane HVAC system installed in 2014.

Unfortunately, the system in the Vault has struggled to maintain its temperature and relative humidity set points of 55-65 F and 25-40% RH. In fact, data collected by UASC PEM 2 dataloggers since January, 2016 indicate a troubling trend of progressively worse temperature and humidity conditions in the Vault from April to October every year. In 2018, the system reached a level close to 80% RH in July. Temperature reached a peak of over 80 degrees Fahrenheit in March, 2018. These conditions make mold a serious concern for UASC collections in the Vault. Relative humidity has also reached dangerous lows as well, sometimes falling to as low as 17%-28% in the winter according to the pre-visit questionnaire. Conditions

in the rest of the storage rooms are generally worse than the Vault with temperatures trending at about 70 degrees Fahrenheit. This building-wide system also malfunctions.

Ms. Bruttomesso has worked closely with facilities to improve conditions in the vault, though obstacles remain. In the pre-site visit questionnaire, it was reported that while UMass Boston Facilities Department inspects the climate control system, the Facilities Department and Trane personnel have not determined which party is responsible for maintaining the system, leading to a lack of preventative maintenance. Immediately after the site visit, Ms. Bruttomesso spoke with the system designer to discuss the issues relating to the Vault, though the strategy the designer proposed of cutting the room off from the air circulation system in the building did not appear to remediate the environmental conditions.

Despite these challenges, Ms. Bruttomesso has employed a variety of strategies to manage the temperature and humidity in the storage space. Chiefly, Ms. Bruttomesso manages an effective monitoring program using PEM2 dataloggers and eClimateNotebook. Having gathered temperature and humidity data since January, 2016, the knowledge UASC has collected is eminently actionable and has prepared the department well to move forward and develop sustainable approaches to managing the environment that serve collections and manage costs associated with temperature and humidity control. It is because of the department's environmental monitoring program that the current condition of the HVAC system is particularly disappointing. If equipped with a functioning system in the Vault, the department could optimize preservation conditions for collections and adopt practices that have a positive impact on costs. The recommendations below are intended to help UASC staff overcome its current obstacles and help UASC implement practices in sustainable storage environments.

Environmental data for the 7th floor space has not been collected, and if collections were to move to this space, it would be helpful to have data in advance regarding temperature and humidity. However, it is possible that conditions are similar to those in storage spaces outside the Vault, making the location not ideal for the most vulnerable of collections.

Moldy materials have been collected and isolated by UASC in Room 05-07 inside plastic drums and plastic bags. It is possible that inside the plastic, which does not allow for air circulation, the mold could be flourishing. If UASC chooses to retain these collections, UASC should consider implementing next steps for these materials a priority.

Left: While effective isolation tools, the bins and opaque plastic wrap pictured here make it difficult to monitor the collections for active mold. Additionally, resting the objects in tall stacks or in bins can cause mechanical damage. Moving collections to mesh shelves and wrapping the items in clear plastic wrap can improve storage and monitoring. Still, seeking an estimate for remediation and reappraising the collections is an ideal next step.

- **Review the latest research on sustainable preservation environments from the Image Permanence Institute (IPI) to inform discussions and plans for improving environmental control in the Vault and other storage areas.** The series of workshops, webinars, and written

resources were created for both collections managers and systems maintenance staff and can be accessed here: http://www.ipisustainability.org/. Helpful specific resources include:

  - **IPI's Methodology for Implementing Sustainable Energy-Saving Strategies for Collections Environment** (https://www.imagepermanenceinstitute.org/resources/publications/ipi-methodology-guidebook)

  - **IPI's Guide to Sustainable Preservation Practices for Managing Storage Environments** (https://www.imagepermanenceinstitute.org/store/publications/sustainable-preservation-practices-guidebook)

- **Explore the creation of an environmental management team with administration and facilities stakeholders.** As referenced in guidance provided by IPI, creating a team that includes collections managers, administrative staff, and facilities personnel is an effective way to ensure buy-in and cooperation on strategies that improve the storage environment, address maintenance issues, and identify energy saving procedures. More information can be found in the "IPI's Guide to Sustainable Preservation Practices for Managing Storage Environments" https://www.imagepermanenceinstitute.org/store/publications/sustainable-preservation-practices-guidebook

- **Consider an environmental management consultation that focuses specifically on improving HVAC system operation to address the challenges in the Vault.** Managing the environmental conditions in the Vault has been an ongoing challenge for UASC, and a consultation from a third party that looks closely at the Trane HVAC system's operations and delivers recommendations for improvement could meet UASC's needs well. UASC is encouraged to consider multiple organizations in such a process. Below are three options for UASC to investigate further:

  - **IPI**, which offers Mechanical System Analysis and Optimization consultations: https://www.imagepermanenceinstitute.org/environmental/consulting

  - **Linden Preservation Services,** Consulting services specializing in preservation environments: http://www.lindenpreservation.com/

  - **Michele F. Pacifico**, an Archival Facilities Consultant http://www.pacificoarchivalconsulting.com/index.html

- **Investigate grant opportunities that fund the planning and implementation of strategies to address obstacles and achieve environmental management goals.** The NEH Preservation Assistance Grant for Smaller Institutions could be a good source of funding for future projects, especially considering UASC's success in securing a previous grant. However, if major assessments and designs of new storage spaces are pursued, which could address long-term challenges such as insufficient storage environments outside the Vault, then a larger grant should be considered. The NEH Sustaining Cultural Heritage Collections grant is an opportunity already being reviewed by Ms. Bruttomesso this year, and this report encourages her to continue to review this option: https://www.neh.gov/grants/preservation/sustaining-cultural-heritage-collections

- **After reappraisal and deaccession practices are developed, begin to reappraise moldy materials and seek a proposal from a mold remediation vendor to make an informed**

decision about retention or remediation for these collections. The sooner a decision is made, the more likely the collections will be able to be salvaged and placed in archival quality enclosures. UASC is already familiar with remediation vendors, and a list of vendors can be found on NEDCC's Disaster Assistance page: https://www.nedcc.org/free-resources/disaster-assistance/emergency-phone-assistance

- **As moldy materials are examined by vendors, improve mold storage practices.** The plastic drums and black plastic bags used to wrap materials may be effective in isolating the mold. However, the materials cannot be monitored within the bags and bins. Additionally, the tall stacks on top of the bins and situation inside the bins may be causing mechanical damage. Isolating the materials in clear plastic wrap on mesh shelving would provide more support and allow the materials to be monitored.

C. Protection from Light

All light accelerates deterioration by providing energy to fuel damaging chemical reactions. **This damage is cumulative and irreversible.** While the ultraviolet (UV) spectrum of light is the most damaging, it is important to understand that visible light can also cause a great deal of damage. Its extent is determined by the intensity of the light and the length of exposure. Light causes paper to fade, yellow, or darken, and media to fade or change color. While all materials are vulnerable, particular care should be taken with composite objects (those made of a variety of materials such as paper, fabric, leather, inks, colorants, etc.) because each component part may have a different degree of light-sensitivity.

As with studies on optimal storage environments, recent research on lighting for cultural heritage organizations has focused on improving preservation, reducing energy consumption, and increasing sustainability over time. LEDs (light-emitting diodes) have emerged as a preferred lighting option because they emit no ultraviolet, they emit very little infrared, and they reduce overall energy needs.[8]

Institutions that are not in a position to invest the staff time and resources needed to explore retrofitting lighting systems can make a number of improvements to reduce light damage to collections. Exposure to natural lighting can be reduced through the use of blinds or curtains, or by placing UV-blocking films and panels over windows and skylights. UV-blocking sleeves and covers are available for fluorescent tubing. Display cases and frames can be fitted with UV-blocking glass or Plexiglas, and original collection materials can be replaced on exhibit with high-quality facsimiles, where appropriate. Storage and exhibit areas can be fitted with timers or motion-activated lighting, and items in storage can be boxed or otherwise housed in protective enclosures to further reduce exposure.

Observations & Recommendations

Collections are exposed to different forms of light in each storage space. On the 8th floor in Room 08-09 and Studio 08-13, collections are exposed to natural light, fluorescent tubes, and LED lights. Materials in the isolation room, Room 08-10, are exposed to fluorescent lights. On the 5th floor, materials in 05-07 are lit by fluorescent tubes and natural light. Room 05-20 is also lit by fluorescent light and natural light. The reading room in 05-25 is also lit with fluorescent light. The possible storage space in the 7th floor is lit with fluorescent tubes and natural light. The Vault is exclusively lit with fluorescent tubes.

UASC has taken steps to manage light exposure, including keeping blinds drawn when a space is not also occupied by staff during the work day. They have also responsibly turned off the lights when the area is not

[8] Druzik, James R., and Stefan Michalski. 2012. *Guidelines for selecting solid-state lighting for museums*. http://www.connectingtocollections.org/wp-content/uploads/2011/08/SSL-Guidelines-Ver.-10.0.pdf

in use. Furthermore, the vast majority of collections are enclosed, preventing regular light damage to most materials. Additionally, materials are kept mostly away from the windows when possible.

The current level of light exposure still poses a risk to collections, and addressing the current levels and sources of light would benefit materials in the long-term. Light can damage boxes and cause them to fade and deteriorate faster than if light were not regularly present. Also, unenclosed books are more susceptible than other materials in the collections. Fluorescent light in the reading room can also affect materials in the long-term.

Left: This flip-top box is a good example of a box suffering from light damage. Note the fading on the right-hand side where the box likely extended beyond the shelf. This box would be a suitable subject for testing PH levels.

- **If possible, only use the LED light sources in the 8th floor spaces.**
- **Continue keeping storage spaces dark when not in use.** If items in process need to be left outside of storage for any amount of time, keep them in their folders and boxes.
- **Enclose bound materials with lasting value to protect them from light exposure, as well as dust, dirt, and water.** Recommendations for materials on exhibit are discussed in later sections of this report.
- **Pursue LED lighting options for all collection storage areas and use areas.**
    - Another option would be to ensure that UV-filtering sleeves are installed on all fluorescent tubing. Sleeves will provide additional protection against the most harmful portion of the light spectrum. For more information on UV filters, please see the Canadian Conservation Institute's CCI *Notes* 2/1 Ultraviolet Filters, here: http://canada.pch.gc.ca/eng/1439925170062. It is important to be aware, too, that these filters have a lifespan and will need to be replaced over time.

D. Protection from Water

The best insurance against water damage is regular inspection and maintenance of the roof covering and flashings. Gutters and drains should be cleaned at least twice per year (ideally at the end of each spring and fall). Storing collections underneath water or steam pipes, lavatories, mechanical air-conditioning equipment, or other sources of water should be avoided, as should storing collections directly on the floor. Shelves or pallets should hold materials at least 3" above floor level. Water alarms should be installed in

areas at high risk of seepage or flooding. It is also a good idea for staff to familiarize themselves with the location and operation of water mains and shut-off valves in the event that it is necessary to shut off the water supply during an emergency. This information should be included in the institution's disaster plan.

Observations & Recommendations

Issues relating to water incursion have been minimal at UASC. According to the pre-visit questionnaire, a leak was discovered in the dehumidifier in the vault in January 2014. However the effort was responded to quickly and no materials got wet.

Overall, water issues are well documented in UASC spaces thanks to the Walk Around and Concerns excel spreadsheet managed by Ms. Bruttomesso. The spreadsheet reveals that UASC has worked proactively when potential issues are imminent. This was the case on June 20, 2016 when the UL storage area was sealed with plastic and sandbags during high pressure water testing.

UASC could continue to improve its risk mitigation to water damage as time allows, given the documented history of the space reveals a limited risk overall. Overall, most materials are lifted off the ground, though not all of them are at least 4 inches above the ground. Additionally, not all storage shelving is fitted with canopies to reduce the risk of water from above. Finally, UASC has a large disaster supply kit with plastic tarps kept on the fifth floor, and having this kit is an important step to improving preparedness.

The history of the potential future storage area on the 7th floor is less well understood by UASC staff, because they have not used the space before.

- **Reduce risks to collections by raising all materials at least four inches off of the floor.** Since even minor leaks can produce pooling water, posing a serious threat to materials on the floor, the items resting on the floor should be raised.
    - In your disaster kit explained further in Section III. F. Emergency Preparedness, have plastic sheeting ready in case of a water event.
- **To further bolster protection from water damage, complete a disaster plan for collections and orient staff to water shut-off valve locations and operation.** Additional protective measures in the case of an emergency are discussed in Section III.F. Emergency Preparedness.
- **Consider installing canopies on the uppermost level of book shelves to increase protection from water leaks in ceilings.**
- **If collections are to be moved to the 7th floor, speak with facilities personnel to identify potentially problematic areas in the space that may have a history of leaks.**

E. Protection from Fire

All preservation efforts become moot if collections are destroyed by fire. For this reason, it is recommended that buildings housing collection materials be equipped with a building-wide fire detection and suppression system. Fire detection devices—ideally including both smoke and heat detectors—should be wired directly to the local Fire Department or another agency where they can be monitored 24 hours a day, 7 days a week. All fire protection systems should be tested and inspected regularly.

The installation of fire sprinklers in close proximity to collections was once a subject of debate because of the risk of leakage. Today, however, building-wide fire suppression is an accepted practice. There are several reasons for this. First, wet materials can often be salvaged; burned materials cannot be. Second, sprinkler heads activate individually and can extinguish a fire at an early stage, before it spreads to multiple rooms. A study completed in 2011 by the National Fire Protection Association (NFPA) found that 90% of structure fires are extinguished with three or fewer sprinkler heads.[9] Third, sprinklers discharge far less water than fire hoses: the average sprinkler head discharges 20-25 gallons of water per minute in a relatively gentle spray. By contrast, fire hoses discharge between 100 to 250 gallons per minute. In the event of a fire, limited sprinkler action would cause water damage to a relatively small portion of the collection, in contrast to the devastating damage resulting to both the building and collections from the deluge of pressurized water during an uncontrollable fire.

Observations & Recommendations

The Healey Library does not have a history of fire in its building, and UASC maintains basic fire mitigation equipment and procedures. The 13 floor building is equipped with a smoke detection system, and fire drills are practiced during the first week of each semester. When a drill occurs, it is not uncommon for students to ignore the alarm, but UASC staff ensures that the reading room is cleared before vacating the building, which is a very good practice. Staff has also been trained in the use of fire extinguishers; it should also be noted that these fire extinguishers are inspected annually by a vendor.

Still, major renovation projects are ongoing, and this warrants increased preparedness at UASC. The Healey Library building does not have a sprinkler system, although newer buildings on campus such as the Science building do have a suppression system. Additionally, the Fire Department has not visited UASC spaces to discuss priority collections. UASC's situation as part of a department within a University Library system can make navigating the proper channels to secure a visit from Fire Department personnel challenging. However, the Office of Environmental Health and Safety is responsible for liaising with emergency personnel and may be an ally in this effort.

A unique potential threat to collections as it relates to fire is the relocation of materials to Floor 7. The shelves in this space are open to the floor below, which could create a flue for fire to climb during an emergency.

- **In the long-term, speak with relevant stakeholders to make the need for a suppression system in the Library clear.** The fact that newer buildings include fire suppression systems suggests that administration recognize their value. While it is unlikely that the UASC could install such a complex and costly system in the near future, UASC would benefit from ensuring that administration understands the immense benefit such a system would have for UASC materials in the case of an emergency. This would help to ensure that UASC was not overlooked if planning began for such a project.

- **Work with the Office of Environmental Health and Safety to receive consultations on fire preparedness and invite the Boston Fire Department to discuss the locations of priority collections in the UASC.** Establishing a strong relationship with Office of Environmental Health creates the opportunity to make firefighters aware of (or refresh their memory of) the location of

[9] Ahrens, Marty. 2017. *U.S. experience with sprinklers*. Quincy, Mass: National Fire Protection Association. https://www.nfpa.org/~/media/files/news-and-research/fire-statistics/fire-protection-systems/ossprinklers.pdf

critical materials, increasing the possibility that they will be taken into consideration during firefighting operations.

- The Museum SOS Fire Safety Self-Inspection Form for Cultural Institutions provides additional guidance on what to look for during inspections: http://museum-sos.org/docs/strat_assess_fire_checklist.pdf.

- If collections are moved to Floor 7, bringing up the challenges this area poses for collections in a fire emergency would be helpful when speaking with the Fire Department.

F. Emergency Preparedness

Emergency preparedness — efforts to prevent damage from fire, water, and other hazards — is an essential component of preservation. Every institution with collections of enduring value should evaluate its risk of events that could damage holdings. Plausible risks should be addressed, and the institution should prepare a formal, written plan for responding to collection-related disasters.

A disaster plan should include the following information:

- Identification of a disaster response team to coordinate first response and salvage activities.
- Contact information for staff members who will assist in case of a disaster, including home and cell phone numbers.
- Phone numbers and contact names for providers of local freezing services, building dry out services, and vacuum freeze drying services.
- Identification of proper procedures for drying the range of materials found in your collection, as well as the location of in-house disaster supplies.
- Identification of priority items to be rescued in a disaster.
- Information about insurance coverage.

Collection emergencies can be addressed quickly, and damage avoided or minimized, if staff are prepared to respond. For this reason, every collecting institution should ensure that staff members are familiar with the plan and trained to carry it out, and that at least one complete disaster response kit is on hand. Some of the most common incidents that affect collections are burst pipes and roof leaks, so staff should be equipped to recover small quantities – approximately 200 books or fewer, depending upon available space – of water-damaged materials. Large quantities of material, or materials damaged by contaminated water, will require professional assistance. For many types of materials that become wet, quick freezing (within 24 hours) prevents mold growth and can keep damage to a minimum; however, freezing can damage other types materials (e.g., audiovisual).

Observations & Recommendations

UASC has made strides in recent years to prepare for emergency situations. UASC has developed relationships with Belfor, Polygon, and BMS Cat to ensure a speedy response if a disaster were to occur. The UASC also implemented an isolation room for newly accessioned collections, which assists in reducing the risk of introducing mold and pests into the collection. The walkthroughs and strategies outlined in protection against water and fire have also reduced risks to collections.

UASC has been well equipped to take these steps thanks in part to the professional development opportunity Ms. Bruttomesso has pursued. These workshops include *Risk Assessment and Mitigation Training* (COSTEP, 2014), *Security for Special Collection Librarians* (International Foundation for Cultural Property Protection, 2017), *Exoskeleton in the Closet – Integrated Pest Management* (Historic New England, 2017), *and Emergency Response and Disaster Planning* (Phillips Academy, 2018).

UASC is pursuing steps to further improve emergency preparedness for their collections. Ms. Bruttomesso is currently working on a disaster plan. This will be an important project, especially given the aforementioned construction on campus.

- **Complete the disaster plan for UASC collections.** Staff is well aware of the value of this document in responding effectively to emergencies when they occur.
    - As part of the disaster plan writing process, consider creating a disaster planning committee including relevant stakeholders to UASC such as facilities and Library administration. This can improve the sustainability of the plan by creating widespread buy-in and empower UASC staff to navigate issues outside their staff's usual purview such as shutting off facilities equipment in an emergency.

- **Train staff in disaster response and salvage practices for collection materials.** Consider purchasing AIC's *Field Guide to Emergency Response* and their *Emergency Response and Salvage Wheel* for education and reference.[10]
    - **When possible, all staff should participate in a hands-on workshop on recovery of wet materials.** NEDCC, along with a number of other organizations, offers disaster planning workshops on request.

G. Housekeeping & Pest Management

Dust, dirt, and paper detritus can attract pests, and may also serve as a substrate for mold growth, especially in warm or damp environments. Systematic housekeeping, including periodic vacuuming of floors and dusting of shelves, boxes, and books, serves two important functions: it actively discourages pest infiltration and mold growth,[11] and it indicates to staff and patrons that the collections are valued.

Many pests see collections as a source of food or nesting material. Clutter and food remains attract pests, and food odor is one of the cues to pests that a space may be hospitable. Eating and drinking should be restricted as much as possible and should be prohibited in all spaces where archival materials are stored, processed, or used.

Integrated Pest Management (IPM) is the standard practice for organizations holding cultural records. IPM focuses on addressing and correcting causes of pest infestation rather than symptoms. Strategies include routine monitoring, controlling pest habitats, identifying and sealing points of entry, and eliminating food sources to prevent infestation. The goal is to control pests using methods that are least harmful to humans, least damaging to the general environment, most likely to show concrete results, and that can be most effective with the least difficulty and cost. In most instances, a combination of strategies will offer the best solution.

[10] Heritage Preservation online catalog: https://www.heritagepreservation.org/catalog/
[11] Zachary, Shannon. 1997. "Managing a stacks cleaning project". *Archival Products News* 5 (1), www.archival.com/newsletters/apnewsvol5no1.pdf; and
NEDCC. 2012. "Preservation Leaflet 4.3: Cleaning Books and Shelves." Andover, Mass: NEDCC. https://www.nedcc.org/assets/media/documents/Preservation%20Leaflets/4_3_CleanBksShelves.pdf

In cases where problems do not respond to preventive techniques, direct treatment for infestation may be necessary; however, due to the toxic nature of pesticides, chemical extermination for pest problems should be used only as a last resort.[12]

Observations & Recommendations

UASC has dealt with a variety of pests in the past two years. At present, mice and birds are found occasionally on all the floors of the building, and clothes moths affected collections in the spring and summer of 2017. Typically, mice and birds are found monthly in storage areas. However, the climate controlled vault has not been infiltrated. UASC has responded to these incidents by including sightings and response efforts in the UASC Walk Around and Concerns Excel spreadsheet and reporting the issue to facilities. Facilities does not use chemicals or poisons to respond to these issues, instead they use sticky and snap traps. Birds are not trapped or caught. Instead, UASC staff is told to wait for a dead bird to be found and removed.

UASC staff has improved its preparedness for pests through professional development. As mentioned before, Ms. Bruttomesso attended the workshop *Exoskeleton in the Closet – Integrated Pest Management* (Historic New England, 2017). Additionally, staff has done their best to remove and dispose of food quickly, and food and drink are not allowed in the research room. The isolation room is another major strategy implemented by UASC staff to reduce the risk of potential threats. In regards to cleaning, UASC vacuums the floors every month and dusts shelves annually, and this work shows; storage spaces were generally very clean on the day of the visit. The cleaning of unenclosed materials and enclosures is not part of this process, and UASC may wish to explore this process in the future.

In addition to the isolation room, UASC has also created a storage space for moldy items, which are isolated in plastic bags and large plastic cans. It is very encouraging to see such a thorough isolation effort. However, these materials are stored in sub-standard enclosures in orientations that are harmful to the collections in the short- and long-term. If UASC wishes to preserve these materials, their remediation will need to be a priority.

The 7th floor storage space was much dirtier than other storage spaces, because UASC has never been responsible for cleaning it. Cleaning all the shelves would be an important step leading up to a move to this location.

- **Consider incorporating the surface cleaning of unenclosed materials and enclosures into annual shelf cleaning procedures.** Surface cleaning is an important part of a holistic housekeeping approach for collections, and UASC is well positioned to incorporate this strategy into their existing practices.
    - See NEDCC's Preservation Leaflet 4.3 *Cleaning Books and Shelves* for guidance on cleaning archival stacks.[13]

[12] NEDCC. 1999. "Preservation Leaflet 3.10: Integrated Pest Management." Andover, Mass: NEDCC. https://www.nedcc.org/free-resources/preservation-leaflets/3.-emergency-management/3.10-integrated-pest-management; and
Integrated Pest Management Working Group. "MuseumPests.net" www.museumpests.net

[13] NEDCC, 2012. "Cleaning Books and Shelves". Andover, Mass: Northeast Document Conservation Center.

- **Continue to stay vigilant against pest intrusion by working with facilities and the exterminator and reviewing recommendations for pests common to UASC.** UASC is already taking important steps to address pest issues in its storage spaces. Unfortunately, it is difficult to establish a completely secure building envelope in a space as large as the Healey Library. The exterminator responsible for the spaces in UASC is likely well aware of general best practices for dealing with pests, they may not be aware of how rodents and birds can negatively impact historical collections specifically. It may be worthwhile to bring up these threats with facilities and the exterminator to continue to encourage preventative measures against these pests in the future.

    - **House Mouse fact sheet:** http://museumpests.net/wp-content/uploads/2014/03/House-Mouse.pdf

    - **House Sparrow fact sheet:** http://museumpests.net/wp-content/uploads/2014/03/House-Sparrow.pdf

- **If the 7th floor is chosen as a storage space for collections, incorporate shelf cleaning into the collections move.**

H. Security

Security of both the building and collections should be maintained from several angles. Building security as a whole should be considered, along with storage area protections and reading room practices. The building must be well-secured when it is closed to the public. Perimeter intrusion alarms and internal motion detectors wired directly to the local police department or to another monitoring agency are recommended. For the purpose of controlling access during working hours, as well as controlling loss of materials, it is best to limit open entrances, ideally to one used by researchers and staff alike. All other doors should be alarmed to detect unauthorized use.

Access to collections must also be controlled during working hours. To minimize unnecessary access to the building after-hours, master key systems are not recommended for collecting institutions. Building keys and keys to collections storage areas should be strictly limited. A list of key holders should be kept current, and staff members should be required to return keys when they terminate employment.

Researchers using collections should be continuously supervised to prevent theft and vandalism, and to spot accidental mishandling of materials during use.

Observations & Recommendations

To staff's knowledge UASC has not experienced a theft of materials, and security of collections is an area of collections care UASC takes seriously. Library staff who have keys to collections storage and use areas is appropriately limited and only include UASC staff and Ms. Riley. In addition to these individuals, the locksmith and University security personnel have access to the spaces. Facilities must call University security personnel to access UASC spaces when they are locked. Procedures in the reading room are also thoroughly developed. There is never a time in which a researcher is left unattended. Researchers fill out registration paperwork and leave their belongings in lockers. Additionally, only staff retrieves materials, and researchers are only allowed to consult one box at a time. Staff also ensures that researchers are never able to block staff's view of the collections being consulted. Finally, collections are reshelved quickly and accurately by staff using a form.

There may be opportunities to further improve security of collections. A variety of additional steps were discussed during the site visit. These included technology such as key card systems, which can track exit

and entry into spaces. Additionally, staff was very interested in scales that measure boxes to ensure no material has been removed. And while security cameras were mentioned, cameras can be expensive and require regular observation to be useful.

Another topic discussed on the day of the visit was further improving security against internal threat. And while UASC staff considers each other colleagues committed to caring for UASC materials, it was agreed that taking additional steps to prevent internal theft would help to protect each other from suspicion should materials be stolen by individuals both inside and outside of the department. The aforementioned key cards as well as strategies to ensure the "principle of least privilege" is followed in managing catalog records would improve security for collections.

A pressing issue that will be discussed further in Section IV. A. Storage and Use Spaces, is the possible relocation of storage spaces on Floor 8 to Floor 7. There are many problems with Floor 7, including temperature and humidity problems as well as the presence of dirt and debris. However, the most pressing issue is the lack of security. There are no doors controlling entry to the main storage area. Instead, two stairwells on opposite ends serve as the entry points. The two additional sides of the storage space are open to the floor below, which could easily be scaled by an individual determined to get into the space. The numerous openings to the space and long shelf bays also create an opportunity for individuals to be present without being noticed. On the day of the site visit, a person was sleeping in one of the shelf bays. While it would be impossible to completely reduce the risk of theft in this storage space, employing a variety of strategies would help to mitigate the risk of theft, and these solutions are listed in the recommendations.

- **Consider acquiring key card access to collections storage areas for relevant staff.** This would enable staff to track access to storage areas, creating a record that could be referred back to should a theft be suspected.

- **Consider conducting a review of access privileges for platforms that store information about collections with the goal of following the "principle of least privilege."** The concept of the "principle of least privilege is discussed further in "Allan August P. Malig's "An Outsider's Look at Information Security Management in Libraries, Museums, and Archives (LMAs)". http://rizal.lib.admu.edu.ph/2012conf/fullpaper/FINAL%20Full%20Paper_MaligAllan.pdf

- **Consider acquiring a scale to measure collections before and after they have been consulted by researchers.** This would act as an additional barrier against theft when research is being conducted and reduce the risk that small pieces of materials may be stolen while the object at large appears intact on the outside. To further understand a scale's strengths and limitations in protecting collections, consider Everett C. Wilkie, Jr.'s "Weighing Materials in Rare Book and Manuscript Libraries as a Security Measure against Theft and Vandalism": https://rbm.acrl.org/index.php/rbm/article/viewFile/268/268

- **If floor 7 is chosen as a storage location, plan with relevant stakeholders strategies to mitigate the risk of theft.** In general, these solutions will require the installation of barriers for the space and methods for monitoring. Below is a list of options to review that, while not eliminating risks to collections, could be effective in reducing the possibility of theft. UASC may choose to pursue one of these strategies, but a combination of approaches is more likely to mitigate risks effectively.

    - **Install mesh wiring on the railing the opens to the floor below.**

    - **Place foot-traffic belts at the primary entry ways on either side of the storage area.**

- **Install motion detectors at each entry that are linked to an office of a UASC staff member.**

- **Work with facilities to block entry to the storage area from the spiral staircases in the center of the storage space.**

- **Install security cameras at the primary entry points to floor 7 and create signage warning patrons that they are on camera.**

IV. Collections Storage & Handling

A. Storage and Use Spaces

Collections represent an investment to be maintained in the same way that buildings and equipment are maintained. The most basic element of such maintenance is the provision of safe, appropriate storage and use space. Overcrowding materials on shelves and stacking materials on the floor exposes them to distortion, disfigurement during removal and reshelving, and damage from water.

Sufficient workspace promotes safe handling. Both the processing space and the patron-use spaces should provide enough table space for safe handling of the range of collections held within the institution—for example, tables that can fully accommodate most oversized materials. Ideally, the processing space is within or in close proximity to the collections storage area, while the patron-use space is outside of the collections storage room. Pathways should be free of obstruction and wide enough for carts to move freely between storage, processing, and patron-use areas.

Observations & Recommendations

UASC manages a variety of storage and use spaces on the 5th and 8th floor. On the 5th floor, UASC collections can be found in Room 05-07, which wraps around the Archives offices in Room 05-10 and the Vault in Room 05-10C. Across the mezzanine are the Research Stacks in Room 05-20 and the Reading Room in Room 05-24. On the 8th Floor, UASC stores collections in Processing Storage in Studio 08-13 and the Isolation Room in Room 08-10. The 8th floor is also the site of UASC's Processing Room in Room 08-09.

Overall, UASC has done an excellent job to acquire spaces that each serve a different purpose. UASC has separated processing, research, and storage into separate areas. UASC has also separated materials into different spaces based on their storage needs. Vulnerable materials, such as older bound volumes, AV materials, and many photographic materials are housed in the Vault. Materials that have yet to be processed are stored in Studio 08-13, while other processed collections have been placed in Room 05-20 and Room 05-07.

Still, UASC staff has observed serious issues in their current storage situation. Ms. Holden's office is housed in Room 05-07 among the collections, and the Vault, which is the only room with dedicated climate control, only holds 3,684 linear feet, a small percentage of the total 15,647 linear feet used at present. Additionally, Room 05-07 is flanked almost entirely by windows, which make managing light a challenge.

UASC has also identified acquiring more dedicated storage space as a goal in the next five years, and this would address several of the concerns listed above. Given that there are no plans to renovate the current spaces in the Library and construction is based on a major Campus Plan, UASC would likely require outside funding in the form of a grant to accomplish any changes to the Healey Library.

One of the largest potential threats to collections at UASC is the relocation of collections to floor 7, which has vulnerabilities ranging from dust and debris to security and fire. Recommendations relating to this space are addresses throughout the report. General storage considerations are outlined for this space in the recommendations below.

- **As collections continue to be processed, continue to make careful choices regarding the ideal storage location for collections.** In general, UASC has prioritized photographic, audiovisual, and rare books for the Vault. UASC may wish to also consider certain architectural drawings and paper made in the late 19th century and early 20th century. As space fills up in the Vault, consider prioritizing color photographs, slides, and negatives over black and white materials

as well. For a longer list of ideal storage conditions for collections, review formats found in the Preservation Self-Assessment Program Collection ID Guide: https://psap.library.illinois.edu/collection-id-guide

  - If a choice appears unclear or another factor such as necessary storage furniture complicates the choice needed to be made by UASC staff, consulting with a conservator or preservation specialist would help UASC come to an informed decision about prioritized storage.

- **Use the data gathered by UASC staff to plan for applying to grants that would help UASC to acquire more preservation quality storage space in the long-term.** As mentioned previously, there are several challenges in the storage spaces outside the vault, and UASC collections continue to grow. Acquiring outside funding could be a method for securing funding that would help UASC secure a renovated storage space outside of the existing Campus Plan.

  - An excellent potential source of funding for this project is the Sustaining Cultural Heritage grant (https://www.neh.gov/grants/preservation/sustaining-cultural-heritage-collections), which has an award for planning these projects as well as a grant for implementing them.

B. Storage Furniture

Shelving and other storage furniture should be appropriate in size for the collections to be stored and provide good support for the materials. For example, oversized shelving may be required for some materials so that they do not project into the aisles where they can be bumped and damaged. Specialized furniture may be required to store maps, architectural drawings, and other oversized materials.

The choice of shelving materials is also important. In the presence of moisture and oxygen, storage furniture made of wood can produce by-products that react to form acids and other damaging chemicals. This may be a serious problem in closed furniture like map cases, file drawers, locked bookcases, or exhibit cases, where pollutants can build up. Storage furniture should be chemically inert; shelves and drawer units made from powder-coated steel or anodized aluminum are the best choice.

Observations & Recommendations

The UASC makes use of a variety of storage furniture in its spaces. Overall, UASC depends largely on standard-size shelving, which is prevalent in every storage space. As with most standard size shelving, there are cases in which the shelving is back to back. Flat file drawers also hold many oversize materials on the 5th floor in Room 05-07 and Room 05-20. Room 05-20 also contains bin storage for frames. On the 5th floor, UASC also makes use of adjustable mesh shelving, tables, and flat metal sheeting to lift collections off the ground. In the mold storage area on the fifth floor, plastic drums hold collections.

Overall, UASC makes good use of its available furniture. When back-to-back shelving is available, UASC staff store oversize materials on such surfaces in order to provide more support for objects that do not fit on standard shelving. There are a few opportunities for improvement. Some objects are placed directly on top of mesh shelving, which can lead to indents in the object. Additionally, the plastic drums, while an effective isolation solution, do not provide sufficient support for the objects inside. Based on the day of the site visit, UASC has a need for rolled storage options that is not currently being met by its furniture.

Existing framed and oversize storage furniture may also be used more effectively at UASC, and recommendations for these materials are outlined in Section IV. C. 2. Oversized and Framed Storage.

- **Place archival quality board over mesh shelving, especially on places in which objects such as books rest directly on the mesh shelving.** This will reduce the risk of uneven pressure being applied to the bound volumes and other materials. An example of such archival quality board can be found here: https://www.universityproducts.com/perma-cor-e-flute-corrugated-board.html

- **Consider isolating all moldy materials individually or in small groups on adjustable mesh shelving instead of plastic bins.** The plastic bins are insufficient storage and causing mechanical damage to materials in the short term due to warping. The materials will be better supported and should be sufficiently isolated if enclosed and resting on shelves.

- **As accessions are made and collections are processed and reviewed, prioritize back-to-back shelving for boxes and materials that hang over standard-size shelving or rest on tall stacks.** UASC's back-to-back shelving is an asset for storing oversized materials that will not fit inside its copious flat file drawer storage in Room 05-20, such as large bound volumes and rolled materials.

    - The surface of flat file drawers can also serve as a storage solution for large objects that do not fit inside the drawers.

C. Preparing Collections

Protective Enclosures

Protective enclosures serve several purposes. They facilitate intellectual control of collections by providing a means of keeping like materials together, slowing chemical deterioration caused by light exposure, limiting water damage in the event of a disaster, and protecting against dust and pests.

Two principles should be kept in mind when selecting protective enclosures. First, they should be chemically stable. Paper enclosures should be acid-free and lignin-free, and in most cases, buffered with an alkaline reserve. The purpose of the buffer is to neutralize acids as they form in storage materials through contact with acidic items and atmospheric pollution. Plastic enclosures should be composed of polyethylene, polypropylene, or archival-grade polyester (often sold under the trade name "Melinex"). Enclosures should not contribute to the deterioration of the materials they house. For this reason, buffered enclosures are generally *not* recommended for blueprints, cyanotypes, diazotypes, color photographs, or works of art on paper with alkaline-sensitive pigments. These items can be damaged through reaction with the alkaline buffering agent.[14]

The second principle to keep in mind is that enclosures should keep their contents reasonably stationary and provide them with good structural support. Boxes that are significantly larger than their contents will allow items to shift, making damage more likely to occur as the box is moved on and off the shelf. Boxes that are too small will compress items, causing creases and tears. In flat file drawers, folders should match the size of the drawer (with about 1/2" to spare on each edge), rather than the size of the item, to prevent contents from sliding out of folders as drawers are opened and closed.

[14] NEDCC. 1999. "Preservation Leaflet 4.4: Storage Enclosures for Books and Artifacts on Paper." https://www.nedcc.org/free-resources/preservation-leaflets/4.-storage-and-handling/4.4-storage-enclosures-for-books-and-artifacts-on-paper; and
2018. "Preservation Leaflet 5.5: Storage Enclosures for Photographic Materials." https://www.nedcc.org/assets/media/documents/Preservation%20Leaflets/5_5_photostorage_2018.pdf

Inserts and Fasteners

When processing, any acidic inserts (e.g., bookmarks, scraps of paper, etc.) should be removed so that the acid they contain does not migrate and cause staining. For books that will be retained permanently in a collection, identifying information is best placed on acid-free, lignin-free, buffered paper flags inserted between the volume's first page and front flyleaf. These are available from conservation suppliers. Adhesive labels, such as sticky notes, can stain or otherwise disfigure collections, and should be avoided. While the tacky portion of the note seems quite weak, it bonds well enough to tear brittle paper when removed. Even when items are not torn by sticky note removal, residual adhesive can cause staining and will attract dust and dirt. On a practical level, sticky notes often come loose, effectively rendering any descriptive information on them useless**.** A better option if the item is thin enough would be foldering and labeling the folder or, if the item is thicker or bound, inserting a book flag.

Most fasteners crimp pages and lead to permanent structure changes. Although often made of chemically stable materials, plastic clips exert too much pressure on the papers they hold. This is especially problematic for brittle or weakened papers, which can be easily torn.

Observations & Recommendations

UASC staff, especially Ms. Bailey and student workers assigned to her, are responsible for selecting enclosures and preparing collections for storage. Based on discussions had with Ms. Bailey and a walkthrough of collections, it is clear that UASC does an excellent job selecting archival quality enclosures. Processed collections rest inside folders inside boxes when appropriate, and collections do not slump and are not squeezed inside boxes. As discussed previously, UASC also does a great job separating formats when necessary using a separation form that tracks the location of related materials. The minimal level processing tips section also highlights the removal of specific fasteners and the isolation of certain materials, which is good practice.

As part of UASC's processing strategy, many collections are placed inside temporary storage until they can be fully processed. Overall, this is a good strategy, and based on the walkthrough on the day of the site visit, it is clear that there are opportunities to improve these temporary storage practices further. Materials are – in some cases- stored in ways that will cause mechanical damage in the short- and mid-term. Additionally, the banker's boxes and some other temporary enclosures are not chemically inert, and because the backlog continues to grow, it will be beneficial to transition these materials to archival quality boxes.

Materials have never been tested for PH level, and there may be cases in which storage enclosures will need to be switched out due to age.

Left: These materials are being pressed tightly against one another and are enclosed with harmful fasteners and wraps. Improving the storage conditions in this box before the materials are fully processed could include removing and replacing fasteners and wraps, placing bound volumes spine down, and ensuring large materials are not pressed too tightly against small materials.

Right: While a lesser priority than the box above, the materials in this box could be stored better while waiting to be processed. Storing books spine down in one layer will cause minimal mechanical damage.

- **Continue to house/rehouse materials in archival quality enclosures.** This includes replacing unidentified plastics and other non-archival enclosures (boxes, folders, etc.) with their archival equivalents.

    - **Use a pH pen to test any paper enclosures showing signs of advanced age or being of dubious quality.** All enclosures will deteriorate over time. Any enclosure showing signs of discoloration or embrittlement, or older folders of unknown origin, can be tested for acidity. Many conservation and preservation supply vendors sell pH Pens, including Gaylord Archival (https://shar.es/1BiDAo).

- **Explore opportunities to improve temporary storage of materials that have yet to be processed, starting with new accessions.** UASC collections will benefit from making small improvements to temporary storage strategies that do not take an excessive amount of time to execute. Below are a series of steps to consider:

    - **Replace banker's boxes and other original enclosures with archival boxes that do not have holes for handles.** Banker's boxes and original enclosures are not chemically inert and will contribute to the deterioration of materials as they await processing. The flaps that create holes intended for handling boxes can cause mechanical damage by pressing against the materials inside.

    - **Store bound volumes spine down in one layer inside boxes.** This will reduce straining the bindings and adding excessive weight to books stored in tall stacks.

    - **Ensure that rolled oversized items that have yet to be processed are off the ground and sit horizontally.** The edges of rolled items can be crushed when made to rest vertically.

    - **Conduct a brief scan of collections to ensure that twill tape, rubber bands, and other fasteners are not causing short-term harm by applying unnecessary pressure to collections.**

    - **As with processed collections, ensure files do not slump inside boxes.**

1. Storage of Bound Materials

Books

The width, height, and binding of a book affect its preservation outlook. As much as possible, volumes should be shelved by size. Small volumes will not support larger ones, and can be crushed by the weight of surrounding books.

Volumes under 12" are generally considered non-oversized and need to be shelved upright and supported by bookends to prevent leaning. Leaning can cause distortion over time from the stress placed on bindings. Broad-edged ("non-knifing") bookends are safer than the flat ("knifing") variety, whose sharp edges may damage books. Staff can modify knifing bookends by slipping a piece of acid-free foam-core covered with bookcloth over the sharp metal edge. A brick covered with bookcloth fastened with PVA adhesive also makes a good book support.

Volumes over 12" tall are generally considered oversized. These are best shelved flat for overall support; placing them in stacks no more than two or three volumes high will facilitate safe handling. Alternatively, where flat shelving is not possible, oversized books can be shelved on their spines—but never on their front edges (or "fore edges"), since the weight of a book's pages will pull the text block away from its cover.

Shelving practices play a major role in keeping books in good condition. All books need to be supported completely by their shelves. Those that protrude past the edge can become misshapen over time, and they can easily be bumped, which can cause damage. Regular shelf maintenance will give staff the opportunity to spot and correct improper shelving.

For damaged items, enclosure in custom-fitted boxes or four-flap enclosures is often the best option. Protective enclosures provide structural support, protect volumes as they are moved on and off the shelf, and protect against light, dust, and water.

Observations & Recommendations

In general, UASC does a great job storing bound volumes. Bound volumes can be found in every storage room. In Room 05-20, there are a large number of bound volumes that sit upright on shelves and many of these materials are perfectly supported and do not slouch. Oversized bound volumes are also generally very well supported, resting flat in stacks that do not often exceed two to three.

There are some exceptions to these generally good conditions. In Room 05-20, some very tall bound volumes are squeezed slightly against thicker, shorter books. Some books also slouch slightly, and non-knifing book ends support most books. There are also examples of oversized bound volumes resting on stacks taller than three, which is the case with the Sanborn maps and the Boundary Lines books in Room 05-07.

A small group of very old bound volumes are stored inside the Vault, and UASC has made the right choice in prioritizing these materials for the climate controlled storage space. The twill tape on one of these bound volumes is dyed, which can stain the book. The twill tape on many of these books is tied so that the knot is on the cover of the books, which can put pressure on the book when they are stacked on top of each other. Overall, these books would benefit from custom enclosures.

UASC has the practice of using phased boxes and twill tape, and the phase boxes are constructed by Ms. Bailey. While the phase boxes are a major improvement over just twill tape or no enclosure at all, phase boxes/twill tape combinations create access issues, because they are difficult to open, and holes in corners

can create opportunities for dust to enter the enclosure. UASC would benefit from evaluating these enclosures in comparison to custom-made clamshell boxes.

Left: These books are experiencing minor mechanical damage due to slouching and should be propped up.

Right: This book should be assessed for a new storage enclosure. At a minimum, the blue twill tape should be removed and replaced with undyed twill tape with the knot tight on the fore-edge or top of the book rather than the cover. The relocation of the knot will allow bound volumes to be safely placed on top of it or for it to safely rest upright next to other books.

- **Improve shelving practices for bound volumes where needed.** In general, shelving practices are quite good. Identifying problem areas such as shelves with slumping books and books in tall stacks will bolster the stewardship of bound volumes.
    - If possible, reorganizing volumes so that similarly sized books are stored together would also go a long way in improving the support of bound volumes.
- **Assess and expand the use of custom boxes for books with red rot and damaged or fragile books that have a high priority for preservation.** Examples might include handwritten volumes and the books selected for Vault storage. While the phase boxes accomplish preservation goals for the books, they are not without their flaws. Custom clam shell boxes are easier to open, provide a greater level of protection against particles, and provide more support overall. They also come highly recommended by NEDCC's book conservators. An example of these boxes is CMI Micro-Climate™ boxes, which are available for around $8.00 to $10.00 each through Custom Manufacturing, Inc. (www.archivalboxes.com). If UASC finds that the phase boxes are more economical, then staff could choose to only acquire clam shell boxes for the highest priority of bound volumes.

- **Review the use of twill tape, ensuring that only undyed twill tape tied so that the knot rests on the fore-edge of the book is in use.**

- **Support non-oversized bound volumes with non-knifing bookends.** These provide support to bound volumes while reducing the potential for the damage that can come from knifing bookends. An example of a non-knifing bookend can be found through the library supply vendor, Demco, (http://www.demco.com/goto?BLK00248159).

Booklets & Pamphlets

In general, it is most practical to store pamphlets and booklets in folders and boxes, or in hanging file folders in file cabinets. For additional guidance on choosing enclosures, see Section IV.C Preparing Collections. Booklets more than about ¼" thick should be stored spine down in individual folders. Pamphlets of very different size should not be stored in the same folder. For additional guidance on foldering and boxing practices, see Section IV.C.2 Documents and Manuscripts. Pamphlets and small booklets can also be stored in specially-made enclosures, and those of similar size can be stored in drop-spine or phase boxes.

Any pamphlets shelved between books should be individually enclosed. Groups of pamphlets shelved between books can be boxed together as long as they are similar in size and in good condition. Pamphlet binders where pamphlets are sewn in are a good storage option. Stitching should be done through the fold or in the item's original fastener holes where possible. Adhesive pamphlet binders should never be used for pamphlets with special value. Pamphlet covers can break along the stiff edge of the adhesive-lined cloth, and the adhesive's chemical properties can irreversibly damage the items attached to them.

Observations & Recommendations

According to the pre-visit questionnaire, UASC stores approximately 114 linear feet of serials inside Room 05-20, and on the day of the site-visit, pamphlets and booklets were observed interspersed throughout bound volume storage areas. There are also piles of booklets stored in Room 05-20. These materials appeared to be in moderate condition, with some examples of warping and fading.

- **Booklets and pamphlets should be transferred to chemically stable enclosures and should be relocated so that they do not rest between larger volumes.** Options include document preservation binders; acid-free, lignin-free, buffered folders and document boxes; and flip-top shelf files.

    - Pamphlet & Document Binders: Hollinger Metal Edge item DBP1013.5: http://bit.ly/2tENFrC
    - Document boxes: University Products item 735-2210: http://bit.ly/2syYEmR
    - Flip-top shelf files: Gaylord item WW-EFCROC1: http://bit.ly/Z6IR8P

Scrapbooks, Photo Albums & Binders

Scrapbooks and photo albums pose challenging preservation problems. Their components often encompass multiple formats with different weights and thicknesses. In scrapbooks, it is common to find newspaper clippings pasted alongside items such as photographs, programs, and postcards. The collective bulk of pages can strain and weaken bindings. Most scrapbooks and many photo albums have support pages made

from poor-quality paper prone to embrittlement, with acids that migrate to the attached items. Adhesives may degrade, causing items to become detached from pages and lost.

The value of scrapbooks varies widely from item to item and from institution to institution. Those composed of newspaper clippings may be valuable only for their information. Others may have significant associational, artifactual, or aesthetic value. Valuable scrapbooks may have a high priority for evaluation by a conservator and for digitization. Scrapbooks that have enduring value in their original form, along with valued photo albums, should be individually boxed in custom-fitted boxes.

Binders are common in recently acquired collections, and pose many of the same preservation concerns found in scrapbooks and photo albums. The binder itself is often made from unstable materials. Contents may include multiple formats with differing needs. The weight and quantity of pages is often greater than can be safely accommodated by the binder and the binder rings, leading to strain on the pages and to unsafe handling. As pages become damaged around the hole punches, there is a risk of loss of loose sheets. Where the binder itself does not have artifactual value, pages should be removed and stored according to guidelines given in Section IV.C.2 *Documents and Manuscripts*.

Observations & Recommendations

Scrapbooks and binders were observed on the day of the site visit, and during the site visit, Ms. Bailey described her practices for storing scrapbooks while processing a pair of scrapbooks in the Processing Room on the 8th floor. Ms. Bailey interleaves pages when appropriate if photographs and newspaper clippings are found. Ms. Bailey also separates materials found inside scrapbooks when necessary. These are excellent practices that should continue. One small improvement that should be considered for scrapbooks is the cutting of interleaving paper to be only slightly smaller than the page itself. Interleaving paper that is larger than the scrapbook increases the profile of the scrapbook, making it more difficult to store the book safely in a custom box.

Binders were found throughout areas with collections that have yet to be processed, and they demonstrated the typical wear and tear found with binders that are not of archival quality. Paper was frayed and aging inside the binders.

- **Continue to effectively process scrapbooks and consider storing scrapbooks in custom-fitted boxes.** The boxes will help slow deterioration by preventing exposure to light and dust, and they will prevent any loose items from becoming lost. Ultimately, boxes should be stored flat on shelves that fully support them, in stacks up to three boxes high.
    - Consider cutting archival quality paper to be just slightly smaller than the pages of the scrapbooks to make it easier to store scrapbooks in custom fitted boxes.
- **Once the collection development policy is established, review binders for rehousing.** Materials with high priority for retention should be transferred to folders and document cases, as described in Section IV. C. 2. Storage of Unbound Materials.
- **Prioritize scrapbooks of high historical value for the Vault.** Scrapbooks are notoriously difficult to care for due to the variety of formats kept within the scrapbooks and cheap paper used to support materials. AUSC should prioritize important scrapbooks for the Vault.

2. Storage of Unbound Materials

Documents & Manuscripts

Foldering and boxing are common practices for the preservation of collections. This relatively simple activity does require some consideration, though. Documents stored in overfilled folders or boxes suffer damage as materials are handled and as researchers search through papers to find what they need. Under-filled boxes lead to the folders slumping, which warps the materials held in the folder. If a box is not full a spacer can be added to keep materials upright. In general, fewer items per folder are best, especially for particularly fragile or damaged items. If a folder must hold a large group of papers (for example, a script), it should be creased along the score lines at the bottom to accommodate the greater bulk of materials. This will prevent pinching at the bottom and also prevent papers from being pushed upwards over the top of the folder where they will be at increased risk of damage from handling and pollutants.

Polyester sleeves are helpful in protecting paper and photographic materials from direct handling and abrasion while allowing easy viewing. Used in large numbers, though, they add bulk to collections, increasing the amount of shelf space needed to store materials. For this reason, and because these enclosures are fairly costly, it is wise to use them selectively—specifically, for items that are fragile (e.g., torn or brittle papers) or vulnerable to abrasion (e.g., photographic prints and negatives). Plastic sleeves can carry an electrostatic charge and should be avoided for items with friable media (media that lift easily from their support) such as pastels, charcoal, flaking inks, or chalk.

Observations & Recommendations

Documents and manuscripts make up 12,000 linear feet of collections according to the pre-site visit questionnaire, making them the most prevalent format UASC stewards. Overall, these materials are stored very well, resting upright in flip top and record cartons without slouching or being overstuffed. The only notable issue relating to the storage of manuscripts and documents is the use of record carton boxes with handles. As mentioned previously, the holes and flaps that make up these handles can apply pressure on collections, and they allow for dust and gaseous pollutants to enter the boxes.

- **As legacy collections are reprocessed, rehouse documents in acid-free, lignin-free, buffered folders inside preservation quality record cartons without handholds.** Rehousing at the folder level is not always necessary, and should be carefully evaluated. Be sure to place any loose records in folders, if any are found during processing.

    - Record cartons that are acid-free, lignin-free, and buffered will provide an important barrier in storage rooms that do not have well controlled temperature and humidity. This carton without handholds from Gaylord is one example: http://www.gaylord.com/Preservation/Document-Preservation/Record-Storage-Cartons/Gaylord-Archival%26%23174%3B-Classic-Record-Storage-Carton-without-Handholds/p/RCS121510A.

    - Even if folders are not replaced, steps should be taken to ensure documents sit upright and are not suffering mechanical damage in their boxes.

Oversized & Framed Materials

Prints, maps, broadsides and other oversized objects present both storage and handling difficulties due to their size, and they may pose concerns related to the processes used in their creation. In particular, maps and plans have been produced on both paper and plastic supports and using different production methods.

These processes and materials introduce different preservation concerns. For example, blueprints are alkaline-sensitive and, unlike other paper objects, are best stored in unbuffered enclosures.

Oversized objects of a similar type and size are best stored together in flat file cabinets or oversized boxes made of preservation-quality materials. Small groups of materials should be placed in archival folders cut to fit the size of the drawer or box. Interleaving within the folder using neutral paper is desirable, especially if oversized materials representing multiple types and processes are stored together.

Depending upon available storage space, the physical condition of a rolled object, and institutional resources, rolled storage using preservation-quality tubes and enclosures may be the best option for some or all of an institution's oversized collections. Although rolled storage is not ideal, it requires less space than flat files, and allows for safe storage of rolled objects that are too brittle to safely flatten.

Framed objects are at risk from poor-quality framing materials and from light exposure. Any prints, drawings, or other objects that have been matted or backed with acidic materials or wood should be removed from those mounts. These objects are best stored unframed—matted or unmatted—in folders inside boxes or drawers, as described above. If items must be kept framed, care should be taken to use preservation-quality materials and UV-protectant glazing. Framed objects must be stored in a manner that ensures their physical safety. Storage solutions include construction of a unit with vertical dividers where framed objects can be stored upright and separate from each other. Alternatively, framed objects may be hung on a museum storage rack.

Observations & Recommendations

UASC maintains a wide variety of oversized and framed materials, which are stored in Room 05-07, Room 05-20, and Studio 08-13. An example of UASC's ability to find solutions for unwieldy materials can be found in Studio 08-13, where a very large flat box holds posters. Certain oversized and framed UASC collections would benefit from a review of storage practices.

Framed materials rest against one another directly on mesh shelving in Room 05-20. There are some cases in which bubble wrap, plastic, or board has been placed on or underneath these framed materials to reduce abrasion and damage, however these materials are not of archival quality. In many cases the frames are also not made of archival quality materials.

Additionally, flat file drawers could be modified and used to store collections more effectively. Clamps were found in the flat file drawer in Room 05-07, and these can apply unnecessary pressure on materials. Additionally, there were no large folders inside the drawers to protect the materials inside and make them easier to retrieve.

As mentioned previously, rolled items can be found resting on their edges in non-archival quality enclosures.

- **Improvements should be made to storage methods in flat file drawers to increase available space, prolong the life of collections, and increase accessibility.**
    - **Use folders that are the size of the drawers to protect documents and provide a space for description.** Folders should follow the same guidelines as those for documents and manuscripts (that is, they should completely enclose the object, they should be fitted to the size of the box/drawer, and they should not be overfilled.)
    - **Remove the clamps from the front of drawers in the oversize file drawers.** These can cause physical damage to the collections when they are removed.

- **For materials kept in frames, explore solutions for improving their storage.** The UASC should seek to improve current storage options for framed materials. Storing frames vertically or flat in individual boxes is appropriate.

    - **Seek conservation framing for priority objects that UASC wishes to keep in frames.** In general, these frames are not made to meet conservation standards and are affecting the preservation outlook of the objects inside.

    - **Ensure that frames are stored upright and, if possible, adjacent to similarly sized frames.** This will reduce the risk of damage to the frames.

    - **Insert archival board in-between frames.** This will reduce the risk of abrasion.

    - **Install archival quality board on shelves and pallets supporting framed materials to reduce abrasion at the base of the frames.**

- **Store oversized items flat, if possible.** No more than 2-3 boxes should be stacked on top of each other. Excessive stacking can lead to access problems and cause structural damage over time.

    - If flat storage is not an option due to space concerns or the fragility of the item, rolled storage might be considered. For more information about rolled storage, please see Syracuse University's *Storage of Architectural Materials*, here: https://surface.syr.edu/sul/3/.

    - Oversized paper objects can be stored safely and inexpensively in large drop front boxes and folders, see these from University Products: http://bit.ly/2sz2uwz. As with document cases, folders should fit the boxes tightly, and every collections item should be in a folder.

3. Storage of Photographic & Audiovisual Materials

Photographic and audiovisual collections are often found stored alongside paper-based records. While many photographic prints—and even some audio recordings—have paper substrates with frailties similar to materials discussed in previous sections of this report, the diversity of materials, processes, and techniques used over time to produce prints, negatives, motion picture film, and audio and video objects pose unique preservation concerns. Identifying the broad formats within your photographic, motion picture, and audiovisual collections is an important first step in responsible stewardship of these materials. Once formats and their general preservation needs are broadly understood, priorities can be established for further investigation of specific preservation needs within each format.

The substrate of an object—the glass in a glass plate negative, the paper in a photographic print—is the base layer that acts as a support for the information carrier. Identifying substrate materials will assist in making preservation decisions. Photographs may have base layers of paper, glass, or tin, while negatives, motion picture film, and microforms will be on plastic substrates of nitrate, acetate, or polyester. Audio cylinders may be wax or plastic, and discs may be glass, metal, paper, or plastic—or some combination of those. Audio and video tape will be made of acetate or polyester.

Most photographic, motion picture film, and audiovisual items are best stored in cool or cold storage, and at a lower humidity than is suggested for paper. Cold storage is especially recommended for nitrate and deteriorating acetate.

Photographic and audiovisual collections pose complex challenges. Improving storage and handling is the first step in providing the broadest benefit for all collections and should be followed by focusing on high-priority items. Any item showing signs of degradation should be assessed for retention and, if kept, prioritized for digitization.

Additional resources on storage, handling, and identification of photographic and audiovisual material can be found in the endnotes and in the storage and identification guides at the end of this document.

Photographic Materials

Photographic materials come in a range of formats and sizes, and a multitude of processes have been used to create these objects. In general, institutions find that prints mounted on board, silver gelatin prints, slides, and negatives are the predominant types in their collections, followed by holdings of tintypes, daguerreotypes, glass negatives, and lantern slides.

Enclosures for photographic formats should subscribe to ISO 18916:2007, the Photograph Activity Test (PAT), an international standard which determines whether a product is stable and appropriate for use with photographs. Ideally, each item would be enclosed individually and housed with items of a like size and type. Any item on a glass substrate should be clearly labeled to ensure careful handling during retrieval, use, and reshelving.

Observations & Recommendations

Photographic materials make up a smaller portion of UASC collections than documents and manuscripts. According to the pre-site visit questionnaire, the UASC maintains 100 linear feet of prints, 20 linear feet of negatives, and 25 linear feet of slides. These photographic materials include black and white and color prints, slides, glass plate negatives, and negatives on film. Many photographic materials have been stored inside the Vault, and this is a good decision given the inherent vulnerability of these materials. Still, some photographic materials such as color photographs and color negatives may require cooler temperatures, and therefore UASC should consider the needs of these collections in future storage modifications in the long-term.

In general, photographic materials are stored in enclosures in plastic sleeves, folded archival quality paper or interleaved with archival quality paper. Slides can be found inside slide pages inside folders and boxes as well. These are very good practices that demonstrate the overall skill of UASC staff.

There are only a small number of areas for improvement observed on the day of the site visit. Some photographic materials slouched and others rested in a slightly overstuffed flip-top box. Examples are shown here in pictures.

UASC highlighted a concern for a small collection of glass-plate negatives stored in the Vault. These materials rested in tall stacks inside a box, and many were stuck inside the older sleeves used to store them. Based on conversations with Senior Photograph Conservator Monique Fischer, it was discussed that these materials are not salvageable and are likely suitable for deaccession. Because it is recommended that UASC further develop its reappraisal and deaccession practices, this collection should serve as a helpful case study in writing that policy.

Left: This flip-top box is bowing slightly due to being overfilled. However, the decision to store the materials in rows of three is a very good choice. Removing some of the materials and possibly grouping the negatives into folders reduce strain on the box and improve access.

Right: This record carton has materials inside that are slouching slightly inside and should be propped up as materials in other boxes are in the UASC.

- **Improve the storage of photographic materials where necessary.** Specifically, UASC should ensure photographs do not slouch in boxes, and guarantee that no boxes are overfilled. For the negatives, folders would also help improve the navigability of the box.

- **Use the review of the glass plate negatives as a case study for developing reappraisal and deaccession practices further.**

- **In the long-term, evaluate the need for specialized cool or cold storage for sensitive media like photographic negatives and slides in the process of designing an updated storage.** See the *IPI Media Storage Quick Reference* for more information on cool and cold storage: https://www.imagepermanenceinstitute.org/webfm_send/301.

    - Color negatives and slides should be evaluated for acetate decay and color shifting, which is irreversible. Black and white negatives are very stable, however, and are lower priority for cooler temperatures.

    - An alternative may be to pursue a consumer level refrigerator for storage of high priority motion picture film and photographic negatives**.** Many cultural heritage institutions rely on cooling appliances to provide safe storage when a true cold storage room is out of reach.

Motion Picture Film

Motion picture film comes in an array of formats and sizes ("gauges") and may be found on nitrate, acetate, and polyester supports. Edge codes, where available, and descriptive information detailing dates of creation

can assist in determining the type of support. The gauge—8mm, 16mm, 35mm, etc.—can also be helpful: 35mm film may be on nitrate, acetate, or polyester, while 8mm and 16mm will be acetate or polyester only.

Identifying the base and gauge of a film are important aspects of physical control for moving image collections and will guide the identification of priorities for reformatting. Determining the generation of a film is another consideration; a camera original may inherently be more valuable than a copy or print. Motion picture film collections should not be played on projectors or other equipment unless inspected by an audiovisual professional. Preservation strategies for motion picture film include film-to-film transfer, digitization, and stabilization of the original media. Stabilization is achieved through maintenance of a cool, dry, clean storage environment, accompanied by protective enclosure of individual items.

Films should be stored individually on a core inside appropriate canisters and shelved horizontally. Enclosures should subscribe to ISO 18916:2007, the Photograph Activity Test (PAT), an international standard which determines whether a product is stable and appropriate for use with photographic materials. Any film on a nitrate base should be assessed for retention and reformatting, especially if showing signs of deterioration. Film on acetate substrates showing signs of decay including curling, warping, or a vinegar odor are also at increased risk of information loss and should be assessed.

Audio and Video

Format obsolescence is a significant obstacle for access to audiovisual materials. The declining availability of playback equipment, coupled with wide variations in the chemical and physical stability of recording media, make the migration of recordings to modern, widely-supported formats integral to their preservation. Even if playback equipment is available for older formats in theory, those formats become *locally* obsolete if the equipment is not available in-house. Dust and other particulates pose a major risk to the longevity of recordings because they cause abrasion, resulting in information loss.

Preservation strategies for audiovisual media must include prioritization for digitization as well as stabilization of the original media, particularly until reformatting can take place. Stabilization is achieved through maintenance of a cool, dry, clean storage environment, accompanied by protective enclosure of individual items. Any item showing signs of degradation should be assessed for retention and, if kept, prioritized for digitization. Correct storage is also important: all cassette tapes, open-reel tapes, and discs should be stored vertically and well-supported to prevent leaning.

Observations & Recommendations

Motion picture film and audio and video materials represent an important part of UASC's collections stored in the Vault. Once again, UASC staff has made a wise decision in placing film and other AV materials inside the Vault due to the materials' vulnerabilities. Similarly to color photographs and color negatives, color motion picture film, acetate film, and most AV materials would benefit from an even colder storage environment.

The storage practices for film vary. Some rest vertically in rows and others are stored horizontally in stacks. All motion picture film observed on the day of the site visit was kept in cans, which are either made of original enclosures or preservation quality plastic. It is highly likely that some of the motion picture film is on an acetate base, and the level of acetate decay is not presently being monitored.

Audio and video materials are generally stored inside their original enclosures inside archival boxes, and the materials vary from audiocassettes to video formats including VHS. There are opportunities to improve the storage of these collections as time allows. Separating paper-based labels from cassette containers and preserving these materials separately in inert plastic is one option.

One of the most notable AV collections at UASC is the Massachusetts Hip-Hop Archive, which was funded by a donation from Pacey Foster and consists of donations from musicians across Massachusetts as well as Lecco's Lemma radio program from 1985-1988.

UASC has pursued the digitization of motion picture film, audio and video by working with vendors such as Mass Productions; some materials have also been digitized in-house with UMass. Boston's AV department.

- **Further develop reformatting priorities for UASC's AV materials.** Media resources, particularly magnetic media, that have not been reformatted risk total obsolescence in the next 10 – 15 years.
    - For an achievable in-house assessment, try AV Compass – a tool developed by the Bay Area Video Coalition for small media collections: http://avcompass.bavc.org/
    - While obsolescence, deterioration, and scarcity of playback equipment are hazards to all AV media, magnetic tape is generally considered one of the most at-risk formats, and this fact should inform prioritization of digitization projects.
    - There are many factors that will determine the priorities UASC develops for preservation and digitization of AV media. This will include relevance to UASC's mission statement, user interest, as well as risk of obsolescence and format vulnerability. For more information on format obsolescence and vulnerability, the Museum of Obsolete Media retains two useful ranking systems:
        - Media Stability Ratings: http://www.obsoletemedia.org/media-preservation/media-stability-ratings/
        - Obsolescence Ratings: http://www.obsoletemedia.org/media-preservation/obsolescence-ratings/
    - When assessing the condition of motion picture film and magnetic tape, UASC may wish to evaluate the level of acetate decay for acetate base film and tape using A-D strips. More information can be found here: https://www.imagepermanenceinstitute.org/imaging/ad-strips
- **Review the current housings for AV materials and replace any that don't fully enclose the materials or appear to be degrading.**
    - Expand the use of preservation quality housing to all high priority AV media. An example of a polyester film enclosure with vents for air flow is this one from STIL: http://www.hollingermetaledge.com/modules/store/index.html?dept=25&cat=147
    - Consider enclosing high priority audio and video materials in inert plastic as appropriate and separating out vulnerable paper-based materials to store separately.
- **Pursue funding opportunities to support audiovisual digitization projects.** NEDCC has a helpful guide to grants that could assist UASC in achieving its audiovisual goals. Given the UASC's existing budget, grants may be a prerequisite for these digitization projects: https://www.nedcc.org/free-resources/funding-opportunities/audio-preservation-funding

D. Handling Policies & Practices

Damage to collections through unintentional mishandling often goes unrecognized, and can pose a significant threat to the longevity of materials. Damage can be prevented by training staff and researchers alike in proper handling techniques for the different types of materials in the collection. Supervising researchers will provide staff with an opportunity to spot and correct any accidental mishandling, and is also a good security practice. Signage reminding staff and researchers of basic good practices, such as using only pencil, can also be helpful.

Providing staff and researchers with the correct tools, and instruction on the correct use of these tools, contributes to safe handling of collection items. Depending upon the types of collections held, an institution may have book cradles, snake weights, micro-spatulas, or other handling aids available. The use of gloves, though, is discouraged.[15] Gloves inhibit the user's tactile sense which leads to unintentional damage to pages as they catch on the gloves or as the wearer attempts to turn pages. **A notable exception is in the handling of photographic and film objects.** Anyone handling these materials should wear nitrile gloves to prevent transfer of damaging finger oils to the emulsion layer of the object.

Observations & Recommendations

The UASC does an excellent job of ensuring safe handling techniques are practiced for materials. UASC staff and student workers are responsible for handling archival collections, and staff have years of experience in proper care and handling. Reviews of care and handling techniques are held annually, which is good practice.

Ms. Holden, staff, and student workers fully monitor researchers; the staff present at the desk also gives researchers a brief introduction to safely handling materials. Additionally, only UASC staff retrieves and reshelves collections. Thanks to these practices, UASC is not aware of any damage to its collections resulting from handling during the research process.

The "UASC' "Application and Rules of Use for Archival Materials" form highlights some important handling guidelines for researchers, such as asking researchers to be careful and maintain original order inside folders. A one-page handout of guidelines on carefully handling collections could compliment this document well and is described in the recommendations below.

During the site visit, Ms. Holden indicated an area of concern for UASC was meeting the high demand for instruction sessions held in the archives while maintaining the high standards of monitoring students outlined above. Indeed, it can be difficult to effectively monitor a full classroom of students without more staff assisting in the Reading Room. Last year, Ms. Holden had to stop accepting requests for visits due to this limitation and its demand on her time. During the site visit, Ms. Holden suggested imposing a cap at the beginning of the school year to encourage faculty to book a session early and allow Ms. Holden to schedule the year further in advance.

UASC does provide materials for researchers, specifically cotton gloves which are washed and worn again and book snakes; a need for more economical book cushions was discussed.

[15] Baker, Cathleen, and Randy Silverman. 2005. "Misperceptions about White Gloves = Fausses idées sur les gants blancs". *International Preservation News.* Vol. 36, p. 4-16. https://www.ifla.org/files/assets/pac/ipn/ipnn37.pdf

- **Implement strategies to further improve the already strong monitoring and guidance provided during research hours and instruction sessions.** During the site visit, a number of strategies were discussed, which are highlighted below.

    - **Create a one-page list of guidance on handling materials to provide researchers and students.** This can make rules more concrete in the eyes of the researcher, reduce confusion, save time spent by UASC staff introducing researchers to the archives, and can also be handed out during instruction sessions. An example from Dalhousie University can be found here: http://dal.ca.libguides.com/c.php?g=257178&p=1717149

        - Reminding the researcher that they are a "partner in preserving" these materials and letting them know that they are always welcome to ask questions can help to strike an encouraging tone when providing this guidance.

    - **Work with faculty booking instructions sessions to prepare them to monitor students alongside UASC staff during instruction sessions.** The faculty member can help to improve oversight and reduce UASC's staff's burden during the sessions. This practice can also help communicate the importance of preservation to UMass Boston faculty.

- **Further develop instruction session booking policies to optimize the workload of UASC staff.**

    - **Consider setting a cap on the number of sessions held during the year as Ms. Holden suggested.**

    - **Consider requiring faculty to book a certain number of weeks in advance.**

- **Take steps to improve the supplies provided to researchers for safely handling materials.**

    - **Provide researchers with nitrile gloves instead of cotton gloves when handling photographic and AV material.** Nitrile gloves are more tactile and do not have strands that can catch brittle paper. They also have the benefit of being cheap and disposable.

    - **Consider affordable alternatives to book cradles.** An example of a Tyvek envelope and bubble cushion book cradle can be found in this YouTube video: https://www.youtube.com/watch?v=6D_IQ2mU2gE

V. Conservation, Reformatting, & Exhibition

The ultimate goal of collections stewardship is to ensure that the materials in our care remain accessible to our community—whether that community is the general public, a municipality, faculty and students, researchers, or any other group defined as our institution's core audience. Conservation, reformatting, and exhibition all serve this goal.

Conservation involves the examination of individual objects, formulation of a treatment plan (or plans) specific to that object, and documentation of any treatment or repair performed in order to stabilize the object so that it can continue to serve its purpose as defined by the institution. Conservation treatment may be required for damaged, delicate, or otherwise problematic objects before they can be handled for reformatting or exhibition. Reformatting may include digitization for online exhibition, digitization for the production of physical facsimiles for exhibition, or preservation photocopying for use.

Most institutions will, at some point, engage in one or more of these activities. Few institutions will have the capacity to perform all of these activities in-house and will need to work with appropriate service providers. Any provider chosen should be evaluated for their expertise in handling items with historic value. Because these activities often require significant resource investment, and may only benefit small parts of the collection, they are most effectively approached within the context of a long-range preservation plan.

A. In-House Repair & Professional Conservation Treatment

When considering any treatment on collections of lasting value, it is best to consult a conservator before proceeding.[16] A conservator has received specialized education and training allowing them to assess and choose treatments that are safe and appropriate for a particular object and that take into account institutional needs and goals for that object.

In-House Repair

In-house repair is only suggested for general circulating collections. Despite best intentions, seemingly simple treatments—such as basic repair, surface cleaning, and humidification and flattening of paper—can cause unintended, irreversible damage if not performed properly. Mending supplies marketed as "archival" (e.g., document preservation tape) may be stable today; however, their aging properties are often unclear. Moreover, product formulations can change without notice: this year's non-staining tape or adhesive may have a different chemical structure next year. Fragile papers and certain writing media (e.g., iron gall ink) may react adversely to the moisture needed for mending or humidification.

Professional Conservation Treatment

The decision of whether or not to have an item treated by a professional conservator should be determined by the item's value to the collection and the availability of funds for conservation. Setting priorities for selection should be the first step. Criteria to consider include condition; monetary, historical, or artifactual value; importance for research, and expected use. On examining an item, a conservator may propose a range of treatment options. Choosing a treatment will depend not only on cost, but also on the item's value in its original form, the importance of the information it contains, its condition, and the need to provide access to the original item itself, rather than to its contents alone.

[16] NEDCC. 2018. "Preservation Leaflet 7.7: Choosing and working with a conservator." https://www.nedcc.org/assets/media/documents/Preservation%20Leaflets/7_7_chooseconservator_2018.pdf

Once conservation treatment is performed, staff should retain full treatment reports indefinitely. This will allow them to refer back and find out exactly how item(s) were treated in the past, should questions or problems arise in the future.

Observations & Recommendations

Staff does not perform any repair or conservation treatment on archival collections. This is good practice. No potentially irreversible actions should be performed without input from a trained conservator. The UASC processing manual instructs staff and student workers to make note of potential issues that may be addressed using conservation treatment. Additionally, after the site visit, suggestions were provided to include condition issues in the survey of bound volumes being conducted.

During the site visit, Ms. Riley asked if investing in a conservation lab and providing training in this area was a feasible goal for UMass Boston in the long-term. In response, it was suggested that this would be less efficient than establishing a set of conservation priorities and working with trusted vendors to accomplish conservation goals. As an alternative to conservation training, it was also pointed out that UMass Boston is better positioned to provide a student worker experience in preventative collections care and preservation as opposed to conservation by working with Ms. Bruttomesso.

- **Actions in the short- and mid-term should focus on activities that provide the broadest benefit to all collections, rather than actions that affect only a small number of items.**

- **Begin to develop conservation priorities based on information gathered during processing and the inventory of bound volumes.** Priorities for conservation should consider a variety of factors, including condition and content and research value. Maintaining a list of priorities will help to ensure that resources for conservation are spent effectively, being used for the most important materials first.

    - NEDCC's conservators are available for free, basic telephone consultations Monday through Friday from 8:30am to 4:30pm, and can be reached at (978) 470-1010.

B. Digitization and Reformatting

Digitization, or digital reformatting, is the process of making a digital copy, sometimes called a digital surrogate, of a physical collections item. While digitization is often an effort to increase access, it intersects with the care of physical collections in important ways. Additionally, rather than reducing the stress on physical collections, digitization can increase demand for use of all the collections as a wider audience becomes aware of them.

As with selection for preservation (see Section II.A), selection for digitization should be grounded in the collecting policies of the organization. Beyond the policy underpinnings, there may be physical preservation concerns that drive the decision of what to digitize and when. As discussed in section IV.C.3, audiovisual materials have very serious format vulnerabilities that help establish their priority for digitization. Photographs, manuscript materials, and bound volumes also need to be physically evaluated for digital reformatting. Digitizing large items, such as maps or folio volumes, requires increased the time and expense. Condition issues, such as those with deteriorating scrapbooks, will increase the complexity of digitization and may require conservation work before reformatting, in turn increasing the time and expense required.

A major concern for collections items during digitization is proper care and handling. Many collections items only rarely come out of their protective enclosures for use, and digitization requires heavy handling and physical manipulation. Items often need to be specially prepared for capture, including removal from frames or unfolding, and may need to be cleaned or repaired. If digital reformatting is taking place in house, the same guidance provided in Section IV Collection Storage and Handling should be followed. Achieving a preservation quality environment is not usually necessary, unless collections will be stored in digitization workspaces for significant periods of time.

Despite its popularity, digitization introduces complex challenges to the ongoing preservation management program in an organization. Digital objects (the products of a digitization project) are an investment of time and resources and, as such, should be preserved. Digital preservation requires a long-term institutional commitment to staff, technology infrastructure, training, and other ongoing preservation costs. Periodic assessment of the digital preservation program will ensure that policies and resources are continuing to meet local standards for commitment to preservation.

Observations & Recommendations

UASC has incorporated a robust array of digitization practices to meet the varied goals in the department. Reformatting projects of paper-based and photographic materials include UMass Boston's Mass. Memories Road Show events, digitization on demand for researchers, and digitization of collections held by UASC. The Mass. Memories Road Show events invite the public to bring physical materials to digitize collections during events that are held in towns and neighborhoods across the state; themed events are also held. Staff and volunteers trained by UASC digitize a large number of materials during each event and follow good handling practices using scanners that accomplish certain digitization goals such as a sufficiently high dpi and appropriate target file format: .TIFF.

Ms. Holden and other UASC staff also digitize materials on demand and provide files via Dropbox to researchers, and based on discussions had during the site visit, it is clear UASC follows good care and handling practices, such as limiting the use of scanners to 2-dimensional objects and digitizing bound volumes with an overhead scanner. Other materials are digitized by UASC staff and added to UMass. Boston's online archive.

Plans to further develop digitization practices at UASC were put on hold in response to budgetary restrictions. Now, as the UASC expects a period of growth, the department is prepared to further improve its digitization program. UASC will be well served by creating digitization policies and practices that include criteria for digitization, methods, vendors, and priorities to optimize the use of funds.

Additionally, as UASC takes steps to ensure its investment in digitization is secure by committing staff time to digital preservation practices, a digital preservation needs assessment would help to build UASC's digital preservation program. This would build on the assessment provided by the National Digital Stewardship Residency conducted in 2016 and 2017.

- **As recommended in Section IV. A. 3. Storage of Photographic & Audiovisual Materials, begin evaluating and prioritizing audiovisual collections for reformatting.**

- **Invest in additional digitization and digital preservation planning training.** Expanding the digital preservation planning and digitization projects of the UASC will require training for staff members responsible for this program over time.

    - NEDCC offers numerous webinars on the topics of digitization and digital preservation, including Introduction to Digitization Standards and Digitizing Photographic collections.

Consult our list of Preservation Training Session here: https://www.nedcc.org/preservation-training/training-currentlist

- Lyrasis also offers online classes on a range of topics relating to digitization and digital preservation. The link to their sessions can be found here: https://www.lyrasis.org/classes-and-events/Pages/LYRASIS-Digital-Classes.aspx

- **Create a list of priorities for digitization and a digitization plan.** A digitization plan may be formatted similarly to a preservation plan. It should highlight major projects, important activities of those projects, and a timeline for initiation and completion. This will help to better manage staff time and resources. A list of digitization priorities may be a formal list of identified collections, but it could also be a set of criteria from which to judge collections that may be suitable for digitization.

- **In the long-term, consider a digital preservation needs assessment from a qualified consultant to improve future digital preservation practices for UASC.** This would build on the assessment provided by the National Digital Stewardship Residency.

C. Exhibition

The need to exhibit collection materials complicates the goal of preservation. When preparing to exhibit collections, many of the same concerns faced in general collections care need to be considered, but the materials displayed have, almost by definition, special value. When considering exhibition, first determine whether an existing exhibit policy is in place. The policy should address institutional needs as well as processes for loaning or borrowing materials for exhibit.

Exhibit cases should be built of stable, pollutant-free materials and coatings. Mounts, supports, and other exhibit materials should be made from inert materials like Plexiglas and polyester, or from neutral board and paper. If cases are lined, only fabric made from cotton or linen should be used, since wool and silk are inherently acidic, and wool is a food source for pests. The fabric should be washed with a mild, unscented, liquid detergent prior to use to remove any sizing.[17]

Remember that different materials have widely varying light sensitivity. For example, although they are both types of photographic prints, a black and white silver gelatin print is much more resistant to fading than a cyanotype. The production process and the types of materials used in any composite object will all affect susceptibility to fading. Research will be required, not just into the susceptibility of the particular type of object (cyanotype, leather bound volume, illuminated page, etc.) but, if possible, also into the exhibit history of that particular item.

Before exhibiting any collection object, determine:

- how long the object will be on display;
- that the object is stable enough to withstand exhibit without additional stabilization, and able to withstand the added light exposure;
- whether there are records of the object's exhibit history and past light exposure;
- whether the object will be secure, both in the building and within its exhibit case/frame;

[17] NEDCC. 1999. "Preservation Leaflet 2.5: Protecting Paper and Book Collections during Exhibition." https://www.nedcc.org/free-resources/preservation-leaflets/2.-the-environment/2.5-protecting-paper-and-book-collections-during-exhibition

- the climate control capabilities both in the exhibit space and in the case/frame, and
- that appropriate supports and mounts are available, or can be produced, to safely display the object.[18]

Answering these questions will provide avenues for mitigation of risks, but the vital point is that original materials of enduring value should never be exhibited permanently. If originals must be exhibited, damage from light can be reduced by keeping light levels as low as possible, and by limiting the duration of the exhibit. Many institutions avoid exhibiting original materials by using facsimiles when feasible.

Observations & Recommendations

UASC designs and implements exhibits regularly and puts on approximately 3-4 small exhibits of materials every year. Each exhibit remains in place for about 9-12 months, and all materials are kept in locked exhibit cases with UV-protectant glass. These cases are checked every day as part of the building walkthrough. The Processing Archivist is responsible for preparing materials for exhibition and has demonstrated skill in this practice. On the day of the visit, exhibits included bound volumes displaying paper marbling as well as a multi-media display representing the life of Theresa-India Young.

Overall, exhibition practices are very good; facsimiles are on display where possible, materials often rest flat or are almost always well supported when displayed at an angle, and very few materials overlap. There were only a few examples observed on the day of the site visit of materials requiring more support than was being provided. Overall, the greatest challenge for collections is the amount of light exposure and length of time materials are on display for: 9-12 months. Under ideal conditions with very limited light, materials should only be kept on display for 3 months. The 9-12 month exhibit practice is due entirely to the time constraints of current staff. It should be noted that exhibit times of materials are not tracked, and this issue could be addressed at current staff levels.

UASC does maintain a policy for how eligible exhibitors use its exhibit spaces. A policy that focuses on topics relevant to how UASC selects and cares for items exhibited from its collections could serve as an additional document that guides exhibit policy.

Left: This bound volume's cover is hanging over the edge of the support system propping it up. This is causing strain to the binding and could lead to warping over time. UASC may wish to invest in additional affordable book cradles to display these decorative bound volumes more safely in the future.

[18] NEDCC. 1999. "Preservation Leaflet 4.10: Matting and Framing for Art and Artifacts on Paper." https://www.nedcc.org/free-resources/preservation-leaflets/4.-storage-and-handling/4.10-matting-and-framing-for-art-and-artifacts-on-paper

- **Review exhibit practices for collections materials and create an exhibit policy to guide the display of collections.** For information about display techniques, see Preservation Leaflet 2.5, "Protecting Paper and Book Collections during Exhibition," at https://www.nedcc.org/free-resources/preservation-leaflets/2.-the-environment/2.5-protecting-paper-and-book-collections-during-exhibition.

    - The University of Washington University Libraries has a strong exhibit policy that can be adapted to suit the needs of UASC: http://www.lib.washington.edu/about/news/exhibits/guidelines

    - Once there is more familiarity with safe exhibition practices, continued purchase or construction of appropriate cradles and supports will create more options for exhibition.

- **Measures to forestall light damage of materials on display should be considered.** In addition to limiting the duration of exhibition, measures could include high-quality facsimiles for all collections on display, installing covers over glass when highly light sensitive materials are on display, and turning the pages of bound volumes left open.

- **As the number of staff grows in the department, consider increasing the rate with which exhibits are rotated.** This will bolster outreach practices as well as improve preservation practices for collections on display.

- **Record exhibit times of items that have been put on display.** The cumulative nature of light damage makes careful documentation of past exhibits necessary for items of value.

VI. Renovation

Renovations or expansion of collection spaces is a considerable undertaking. The following is offered as guidelines regarding issues to consider during planning. If possible, members of the planning committee might want to identify and visit institutions that have undertaken similar projects in the New England area.

Planning

Thorough planning is essential to a successful renovation project to insure that electrical, lighting, HVAC, security and other systems are capable of meeting the needs of the facility and collection. Institutions frequently establish a steering committee with individuals in charge of the project and collection move (including the schedule, writing specifications for the movers and construction crew, cleaning and pest management), space planning (including requirements for equipment, furniture and shelving), systems telecommunications, special projects (like moving and installation of portraits and sculpture, signage, moving any present furniture) and public communications (including general publicity and information to patrons about the project). Some institutions hire a consultant to help plan a move. Actions to consider as part of the plan include: review of the collection to identify potentially fragile and vulnerable items that may need special care and handling; improving intellectual and physical control of materials; establishing the order in which collections are moved; renumbering the shelves to accommodate reordering of collections; and designating staff members to provide security for collections during the move. These steps should include a verification process that insures that all items were moved from and into their proper location. Planning may be more complex if professional movers are not used.

Depending on the nature of the project and overall goals, areas and spaces to be renovated must be evaluated by an engineering firm. The configuration of new shelving should also be carefully considered and overcrowding avoided. Care must be taken to ensure that there is adequate shelving for the rare materials and that aisle space provides easy, safe access. Very high shelving makes access to materials on upper shelves difficult and potentially dangerous for both staff and collections. Additionally, space near the ceiling may be lost to air ducts for the HVAC system. Many books should be housed in protective enclosures, and this strategy will increase the amount of space required to adequately house these materials. A deaccession strategy to gain space will need to be carefully considered and planned.

While all actions may not be possible, good planning should make it possible to design a facility that provides adequate room for use and growth of the collection as well as a satisfactory interim storage area if one is necessary. The timing for moving collections into a newly renovated space should be considered, and it is wise to delay immediate occupation of a space until problems have been addressed and issues such as off-gassing of paints, flooring, and other materials has occurred.

Assessing Collections

No matter who moves the collections, whether professional library movers who are experienced in moving fragile and valuable materials or library staff with little experience, any rehousing of the collections that can be accomplished prior to the move will protect materials physically. Items that have been identified for individual rehousing should be boxed prior to the move. It is especially important to construct protective enclosures for very fragile materials, damaged books, and oversized volumes. Those with detached spines, one or both boards detached, or broken sewing will need boxing. Some rare and fragile materials may need to be wrapped individually or secured with cloth ties. It will be important to consult with movers well in advance to insure they understand the nature and condition of the collection. If staff, students or volunteers are used, they must be trained to handle rare and fragile materials. An assessment of a collection's conditions would be extremely beneficial for planning.

Temporary Storage

Identification of a safe interim storage area is important to maintaining control and safety of collections during a renovation. Off-site storage of the collections may be preferred and a location, staffing, and budget needs must be identified in advance. Environmental conditions such as temperature and relative humidity should be monitored and security systems reviewed as part of a vetting process when deciding on interim storage. A location must be deemed acceptable well before collections are moved into the space. Institutions sometimes choose to move collections from one area of a building to another during renovation projects, and frequently such a strategy results in the collections being moved several times from location to location. Every effort should be made to move the collections as few times as possible. Many volumes in the collection may be fragile and unable to sustain damage unless individually boxed. The books might be wrapped and packed in one-cubic foot storage boxes during renovations or moved on carts and transferred to shelves. Shelving can be rented if needed.

Intellectual Control

Moving can afford a number of opportunities to improve intellectual and physical control for an institution. Ideally, the catalog and inventories would be checked against the collection by completing a full shelf reading prior to the move. It may be possible to refine finding aids or correct catalog entries while preparing.

Maintaining security for materials during the move will also be a concern, and having a high level of intellectual control through verification of materials will help to address this issue. It will be important to record every volume when removed from the shelf, noting the date and box into which it is packed, and to record every volume as it is placed on the shelf, noting the box it was packed in and the date. Notes can be kept in a spreadsheet or by scanning bar codes. At the end of each day's moving session, reconcile the data with the electronic copy of the full catalog and flag and resolve any discrepancies immediately.

Physical Preparation

Materials should be cleaned prior to the move. Dust and dirt from collections can clog filters in a new air filtration system if very dirty books are not cleaned ahead of time. The heads, tails and bindings of volumes should be cleaned with a HEPA-filtered vacuum. Amount of suction can be controlled by using a variable-speed vacuum, using a rheostat, or with the addition of cheesecloth at the end of the nozzle. All materials should be inspected for mold during cleaning. If any are moldy, remediation, conservation, deaccession, or replacement should be considered before moving the books into a newly renovated area.

Although all rehousing may not be accomplished prior to the move, plans for increased space requirements should be made to avoid large shifts of volumes later. In general, a phase box or commercial enclosure adds 1/8 to 3/16 inch to the thickness of volumes, and a drop-spine box adds ¼ to 5/16 inch to the thickness. Materials newly housed in folders and commercial document storage (flip top) boxes will also require increased space. As a rule, approximately 2000 properly housed sheets occupy one-cubic foot of storage. Rehousing and cleaning will require many hours of work and coordination of effort. Guidelines should be established by CAS administration. William B. Meyer is a professional library-moving company that can clean books in conjunction with a move, but supervision by the organization will be required. Quotes can be sought and options considered. Seeking input from institutions that have performed successful moves is recommended. *Moving and Reorganizing a Library* by Wells and Young may be a useful resource.

Risk to Collections

Because renovation and construction expose collections to a number of risks, staff will need to play an active role in providing oversight during all phases of a renovation project. Construction dust, for instance, is very fine and invasive; barriers will not prevent its deposit on bindings and text blocks. Nevertheless, it will be important to construct some sort of barriers at the entrances to the space to reduce the amount of

construction dust entering surrounding areas. Risk of fire, water and other physical damage to the building and collections is great during construction, and it is essential for staff to maintain a fire watch for at least two hours after construction has ceased each day. In addition, designated personnel will need to inspect barriers, pay attention to water incursion, make sure electrical equipment is turned off, and check that doors and windows are locked at the end of each day. Smoking should not be permitted on the job site. It is strongly recommended that the organization's emergency response plan is established prior to the start of a renovation project.

Conclusion

A renovation project is an undertaking that will require significant planning and commitment to address several short-term risks. It may, however, offer the opportunity for the organization to take measures that will improve preservation conditions for their collections well into the future. An updated inventory, new housing for fragile materials, and an updated emergency preparedness plan will all help an organization steward their collections long after the renovation ends, making planning for renovation a valuable long-term investment.

Observations & Recommendations

On the day of the site visit, staff indicated that it would be helpful to address protecting collections during renovation in this report, in part due to the construction taking place on campus, the possibility that collections may be moved in the future, and the chance that storage spaces may change in the long term.

Staff understands well the need to maintain high levels of intellectual control over collections and fully support materials as they are moved from floor to floor. Additionally, during the site visit, staff was reminded of the frequency with which renovation can cause fires and other emergencies in libraries.

- **In the case of a move or renovation project affecting UASC, determine a project manager to coordinate meetings, lead collections moves, and liaise with contractors and facilities.** Given Ms. Bruttomesso's experience working with facilities and role as project coordinator, she may be well suited for this role.

- **Ensure that recommendations regarding housekeeping, pest management, protection from water and fire, and emergency preparedness are in the processing of being pursued prior to the initiation of a renovation project.** Each of these sections will have major impacts on helping to preserve the collections during renovation.

- **Review best practices for preparation of collections for renovation.** Special consideration must be made for caring for collections during renovation. For more information, consult NEDCC's leaflet Protecting Collections During Renovation: https://www.nedcc.org/free-resources/preservation-leaflets/3.-emergency-management/3.9-protecting-collections-during-renovation

- **If the collections are moved from the 8th floor to the 7th floor, an inventory checklist of boxes will need to be created and one staff member's role should be to oversee the relocation effort with this checklist.** This inventory should be completed before and after the move to the temporary location as well as before and after the materials are returned to the permanent location.

    - **A helpful addition to the checklist would be a floor plan of the 7th floor with annotations indicating the anticipating locations of boxes.** These practices during

the relocation will help reduce the risk of loss due to theft but also due to improperly shelving books or accidentally placing a box in the wrong location in the space.

VII. Conclusion

UASC staff has exhibited knowledge of preservation practices and needs, and has shown a commitment to improving the storage and management of the institution's collections. The decision to pursue a preservation assessment attests to an interest in improving care and handling practices to ensure that collection materials are available into the future.

As UASC staff continues efforts to preserve and maintain these unique collections, they face several challenges, including:

- Lack of staff and staff time for core archival functions such as preservation actions, processing, and reference;
- Lack of policies to guide, document, and build upon the generally well-made decisions regarding collection development, exhibition, disaster preparedness, digitization, and conservation;
- dangerous environmental conditions even in the temperature and humidity controlled Vault;
- A growing collection that creates space and processing concerns; and
- An uncertain future regarding the location of storage spaces.

With these challenges in mind, efforts over the next several years should focus on:

- Creating a plan to increase the number of staff and total staff time for core UASC functions, especially preservation, processing, and reference;
- Coordination with UASC staff to develop policies that underpin and develop the decision areas outlined in the above set of bullets;
- Further developing the environment management program through advocacy, grant-writing, and planning to adopt best practices for sustainability;
- Communication with UASC stakeholders and supporters conveying the need to address UASC's developing needs through growth and improvement of storage conditions.

In particular, UASC will want to expand staff levels and explore new strategies for resolving environmental management issues in the Vault. Reviewing guidance on developing an environmental management team and addressing common issues with HVAC systems will serve as a strong starting point. However, UASC would also benefit from working with a firm or consultant that can evaluate the HVAC system and provide actionable recommendations for improvement. At the same time, UASC will need to increase staffing levels to meet demands in processing, reference, and preservation. Increasing the department's capacity for work while resolving the ongoing issues in the Vault will be the most important steps UASC can take to develop its preservation program.

A preservation program will be most effective if it is guided by a written preservation plan. Preparation of a plan should begin as soon as possible. As noted earlier, few institutions have sufficient resources to address *all* of the preservation needs of *all* of their collections. Limited resources require choices to be made among activities, the cumulative result of which will have greater impact if guided by a long-range preservation plan. Preparation of such a plan should be the next step for UASC. The plan should be reviewed annually, and modified as preservation needs are addressed and new ones are identified.

I hope that the overview provided here, combined with the priorities outlined in the Appendices, will serve as a helpful starting point for preservation planning. I am glad to have had the opportunity to work with Ms. Bruttomesso and her colleagues on this project. If this report has raised any questions, or if I can provide any additional information, please do not hesitate to contact me.

Respectfully submitted,

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Appendices

A. Prioritized Recommendations

University of Massachusetts Boston, University Archives and Special Collections

This appendix and the accompanying report are intended for continuing reference for this institution and its staff. Best-practice information for each of the topics is included in the respective report sections, and additional resources are listed in the Endnotes and Appendices.

All of the recommendations in this report are compiled below and organized as short-, medium-, and long-term goals Recommendations within the short-, medium-, and long-term categories are listed as they appear in the report. This organization of the recommendations is based on the consultant's observations and expertise; responsibility for ranking these priorities further rests with the institution.

1. Short-Term Priorities

Projects that can be undertaken with existing resources and/or problems requiring immediate action:

II. Collection Management & Preservation Planning

- **Use the recommendations in this report to prepare a long-range preservation plan for the UASC collections**.
- **Establish a schedule for updating the preservation plan.**
- **Review the mission statement.**
- **Begin drafting a collection development policy.**
- **Establish a routine schedule for reviewing and updating UASC policies and workflows.**
- **Seek approval from administration for the mission statement and collection development policies.**
- **Share the collecting policy with the University**.
- **Review the Processing Manual for Archival and Manuscript Collections.** For more information, see Section II. D. Intellectual Control.
- **Further develop reappraisal and deaccessioning practices.**

III. Building and Environment

- **Use the building log to develop scheduled reports to be shared with UASC stakeholders such as administration and facilities.**
- **Review the latest research on sustainable preservation environments from the Image Permanence Institute (IPI) to inform discussions and plans for improving environmental control in the Vault and other storage areas.**
- **If possible, only use the LED light sources in the 8th floor spaces.**

- **Reduce risks to collections by raising all materials at least four inches off of the floor.**

- **If collections are to be moved to the 7th floor, speak with facilities personnel to identify potentially problematic areas in the space that may have a history of leaks.**

- **In the near term, establish a cache of disaster supplies that will be easily accessible in an emergency and prepare a panic sheet.**

- **Consider incorporating the surface cleaning of unenclosed materials and enclosures into annual shelf cleaning procedures.**

- **Continue to stay vigilant against pest intrusion by working with facilities and the exterminator and reviewing recommendations for pests common to UASC**

- **If the 7th floor is chosen as a storage space for collections, incorporate shelf cleaning into the collections move.**

- **If Floor 7 is chosen as a storage location, plan with relevant stakeholders strategies to mitigate the risk of theft.** For more information, see Section III. H. Security.

IV. Collections Storage & Handling

- **As collections continue to be processed, continue to make careful choices regarding the ideal storage location for collections.**

- **Place archival quality board over mesh shelving, especially on places in which objects such as books rest directly on the mesh shelving.**

- **Improve shelving practices for bound volumes where needed.**

- **Review the use of twill tape, ensuring that only undyed twill tape tied so that the knot rests on the fore-edge of the book is in use.**

- **Support non-oversized bound volumes with non-knifing bookends.**

- **Use the review of the glass plate negatives as a case study for developing reappraisal and deaccession practices further.**

- **Implement strategies to further improve the already strong monitoring and guidance provided during research hours and instruction sessions.** For more information, see Section IV. D. Handling Policies & Practices.

- **Further develop instruction session booking policies to optimize the workload of UASC staff.** For more information, see Section IV. D. Handling Policies & Practices.
- **Take steps to improve the supplies provided to researchers for safely handling materials.** For more information, see Section IV. D. Handling Policies & Practices.

V. Conservation, Reformatting, & Exhibition

- **Actions in the short- and mid-term should focus on activities that provide the broadest benefit to all collections, rather than actions that affect only a small number of items.**

- **Begin to develop conservation priorities based on information gathered during processing and the inventory of bound volumes.**

- **Measures to forestall light damage of materials on display should be considered.**

- **Record exhibit times of items that have been put on display.**

VI. Renovation

- **In the case of a move or renovation project affecting UASC, determine a project manager to coordinate meetings, lead collections moves, and lease with contractors and facilities.**

- **Review best practices for preparation of collections for renovation.**

- **If the collections are moved from the 8th floor to the 7th floor, an inventory checklist of boxes will need to be created and one staff member's role should be to oversee the relocation effort with this checklist.**

2. Medium-Term Priorities

Projects that will require planning and organization or additional resources and staff time:

II. Collection Management & Preservation Planning

- **Expand the staff of the UASC.**

- **Continue efforts to secure grants and other funding for high priority preservation projects.**

- **Expand the student worker program to include an individual to support Ms. Bruttomesso.**

- **Based on the recommendations on this report, increase the preservation budget line for the UASC.**

- **Follow through with plans to identify and consider the adoption of a new collection management system.**

III. Building and Environment

- **Explore the creation of an environmental management team with administration and facilities stakeholders.**

- **Consider an environmental management consultation that focuses specifically on HVAC system operation to address the challenges in the Vault.**

- **Investigate grant opportunities that fund the planning and implementation of strategies to address obstacles and achieve environmental management goals.**

- **After reappraisal and deaccession practices are developed, begin to reappraise moldy materials and seek a proposal from a mold remediation vendor to make an informed decision about retention or remediation for these collections.**

- **As moldy materials are examined by vendors, improve mold storage practices.**

- **Enclose bound materials with lasting value to protect them from light exposure, as well as dust, dirt, and water.**

- **Consider installing canopies on the uppermost level of book shelves to increase protection from water leaks in ceilings.**

- **Work with the Office of Environmental Health and Safety to receive consultations on fire preparedness and invite the Boston Fire Department to discuss the locations of priority collections in the UASC.**

- **Complete the disaster plan for UASC collections.**

- **Consider acquiring key card access to collections storage areas for relevant staff.**

- **Consider conducting a review of access privileges for platforms that store information about collections with the goal of following the "principle of least privilege."**

- **Consider acquiring a scale to measure collections before and after they have been consulted by researchers.**

IV. Collections Storage & Handling

- **Consider isolating all moldy materials individually or in small groups on adjustable mesh shelving instead of plastic bins.**
- **As accessions are made and collections are processed and reviewed, prioritize back-to-back shelving for boxes and materials that hang over standard-size shelving or rest on tall stacks.**

- **Explore opportunities to improve temporary storage of materials that have yet to be processed, starting with new accessions.** For more information, see Section IV. C. Preparing Collections.

- **Assess and expand the use of custom boxes for books with red rot and damaged or fragile books that have a high priority for preservation.**

- **Booklets and pamphlets should be transferred to chemically stable enclosures and should be relocated so that they do not rest between larger volumes.**

- **Continue to effectively process scrapbooks and consider storing scrapbooks in custom-fitted boxes.**

- **Once the collection development policy is established, review binders for rehousing.**

- **Prioritize scrapbooks of high historical value for the Vault.**

- **As legacy collections are reprocessed, rehouse documents in acid-free, lignin-free, buffered folders inside preservation quality records cartons without handholds.**

- **Improvements should be made to storage methods in flat file drawers to increase available space, prolong the life of collections, and increase accessibility.** For more information, see Section IV. C. 2. Oversized & Framed Materials.

- **For materials kept in frames, explore solutions for improving their storage.** For more information, see Section IV. C. 2. Oversized & Framed Materials.

- **Store oversized items flat, if possible.**

- **Improve the storage of photographic materials where necessary.**

- **Further develop reformatting priorities for UASC's AV materials.**

- **Review the current housings for AV materials and replace any that don't fully enclose the materials or appear to be degrading.**

- **Pursue funding opportunities to support audiovisual digitization projects.**

V. Conservation, Reformatting, & Exhibition

- **Actions in the short- and mid-term should focus on activities that provide the broadest benefit to all collections, rather than actions that affect only a small number of items.**

- **Create a list of priorities for digitization and a digitization plan.**

VI. Renovation

- **Ensure that recommendations regarding housekeeping, pest management, protection from water and fire, and emergency preparedness are in the processing of being pursued prior to the initiation of a renovation project.**

3. Long-Term Priorities

Steps to be taken once short- and medium-term goals have been accomplished; and/or larger general goals that will require major funding and/or significant reorganization of resources:

II. Collection Management & Preservation Planning

- **Prioritize the development of future policies based on the needs of the UASC and the time its staff has.**

III. Building and Environment

- **Pursue LED lighting options for all collection storage areas and use areas.**

- **In the long-term, speak with relevant stakeholders to make the need for a suppression system in the Library clear.**

- **Train staff in disaster response and salvage practices for collection materials.**

IV. Collections Storage & Handling

- **Use the data gathered by UASC staff to plan for applying to grants that would help UASC to acquire more preservation quality storage space in the long-term.**

- **In the long-term, evaluate the need for specialized cool or cold storage for sensitive media like photographic negatives and slides in the process of designing an updated storage.**

V. Conservation, Reformatting, & Exhibition

- **Invest in additional digitization and digital preservation planning training.**

- **In the long-term, consider a digital preservation needs assessment from a qualified consultant to improve future digital preservation practices for UASC.**

- **Review exhibit practices for collections materials and create an exhibit policy to guide the display of collections.**

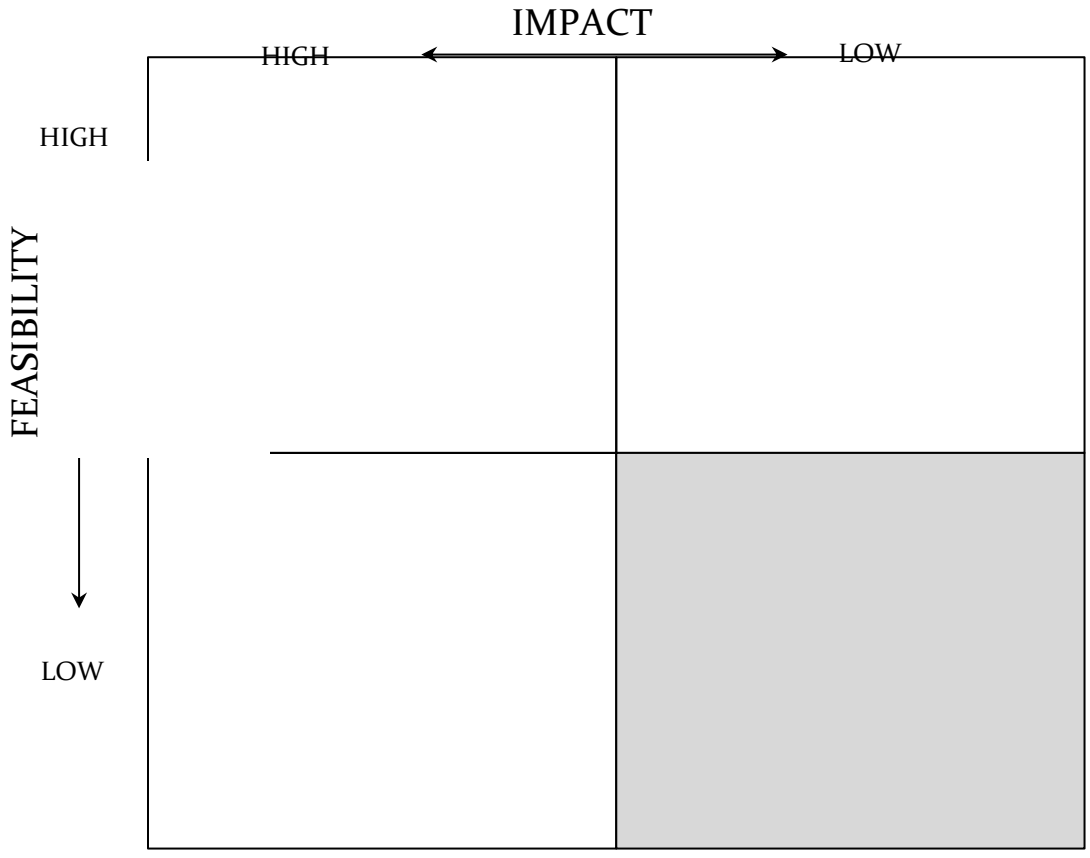
- **As the number of staff grows in the department, consider increasing the rate with which exhibits are rotated.**

B. Implementation Matrix

Understanding your implementation priorities will assist you in preparing your long-range preservation plan. To determine priorities, use the recommendations listed in this report to plot the impact and feasibility for each action against the matrix below, which is adapted from: Pamela W. Darling, *Preservation Planning Program: An Assisted Self-Study Manual for Libraries*, expanded 1987 ed., Washington, D.C.: ARL/OMS, 1987.

High impact actions that can be implemented with little difficulty are placed high in the chart, towards both IMPACT and FEASIBILITY. Items that are difficult to implement and have little impact go in the bottom right corner, distant from both IMPACT and FEASIBILITY.

Actions ranked high in both IMPACT and FEASIBILITY should be pursued immediately, since they can be easily accomplished and will have significant benefits. Those ranked low in the chart can often be postponed or even disregarded because they achieve little while requiring great effort. Many of those items ranked low for IMPACT, even those high on the FEASIBILITY aspect, can be eliminated because they accomplish little—though some may be pursued in order to gain momentum or because they are easy to complete. Items high in IMPACT but low in FEASIBILITY warrant implementation because of their benefits, but will require careful consideration.



C. Resources and Vendors

Archival and preservation supplies may be mentioned throughout the report in order to provide guidance and to show examples of shelving, storage enclosures, pest management tools, and more. Most of these supplies are available from multiple vendors, and staff should select the one that best meets their needs in terms of cost, shipment method, etc. Examples of particular items are intended as illustrations, not recommendations of one supplier over another.

In addition, to assist in understanding and following best practices in archives and special collections, a number of publications, guides, and grant opportunities have been suggested and are listed here for ease of access.

Audiovisual and other media:

- Preservation quality enclosures such as those available from Hollinger Metal Edge (video and tape boxes) and Gaylord (LP sleeves)
- Image Permanence Institute's IPI Media Storage Quick Reference
- Preservation Self-Assessment Program Collection ID Guide for audiovisual

Custom Enclosures for Books, Scrapbooks, or Photo Albums:

- For high-priority damaged or fragile items, CMI Micro-Climate™ boxes: www.archivalboxes.com
- Four-flap enclosures can be made in-house or purchased. Gaylord offers one example: http://bit.ly/17HZQ3l

Digitization:

- NEDCC's Preservation Leaflet 6.6 Preservation and Selection for Digitization
- NEDCC's Preservation Leaflet 6.7 Outsourcing and Vendor Relations
- Federal Agencies Digital Guidelines Initiative (FADGI) Technical Guidelines for Digitizing Cultural Heritage Materials (2016)

Disaster planning:

- dPlan, online disaster plan template www.dplan.org
- NEDCC's Preservation Leaflet 3.3 Emergency Planning
- NEDCC's Preservation Leaflet 3.4 Worksheet for Outlining a Disaster Plan
- Emergency Preparedness and Response resources from the California Preservation Program https://calpreservation.org/information_resources/emergency-prep-and-response/

Environmental controls:

- Image Permanence Institute's Environmental Management Quick Reference
- Image Permanence Institute's IPI Media Storage Quick Reference
- Image Permanence Institute's DewPoint Calculator
- Rochester Institute of Technology's *Simplified Environmental Recommendations* (2015)

Exhibit and Shelving:

- Powder coated steel from Brodart: http://bit.ly/VPikIL
- Lining: MarvelSeal 360, a chemically inert metallic laminate, as supplied by Talas: https://www.talasonline.com/Marvel-Seal
- Lining alternative: buffered box board such as this from Gaylord: https://bit.ly/2Ocv5ht
- NPS's Conserv-o-Gram no. 18/1 Polyester Film Book Supports

- NEDCC's Preservation Leaflet 2.5 Protecting Paper and Book Collections During Exhibition

Funding and Grants:

- National Endowment for the Humanities Preservation Assistance Grants for Smaller Institutions
- NEDCC's Funding Opportunities webpage
- NEDCC's webinar "Creative Fundraising for Preservation," available for free on-demand at https://www.nedcc.org/preservation-training/training-currentlist#ondemand

General Book and Document Supplies:

- Acid-free, lignin-free and buffered interleaving paper like this from Hollinger Metal Edge: http://bit.ly/TRwdao (item 18600)
- Spacer boards to keep documents upright like these from University Products: https://bit.ly/2LUTyLv (item 613-0821)
- pH testing pens for older storage materials like these from Gaylord: http://bit.ly/12hI7Nl (item WW-PH65)
- Norfolk Book Sofa from University Products : https://bit.ly/2MbIA3s (item 805-3271)
- Clarkson Book Support System from Hollinger Metal Edge: http://bit.ly/Xcmtlb (item 2060)
- Homemade cradle using recycled Tyvek shipping envelopes and air pillows
- An example of non-knifing bookends can be found at this link: http://www.demco.com/goto?BLS1816559&ALL0000&es=20150309112539451903

Pamphlet Supplies:

- Acid-free, lignin-free and buffered document preservation binders like these from University products: https://bit.ly/2LURZgw (item 324-7010)
- Acid-free, lignin-free and buffered flip-top shelf files like these from Gaylord: https://bit.ly/2vHL7Ip (item WW-EFCROC1)

Pest Management:

- Pest Management methods and ID http://museumpests.net/
- Pinnigar, David, and Peter Winsor. *Integrated Pest Management: A Guide for Museums, Libraries and Archives.* London: Museums, Libraries and Archives Council, 2004. http://formacaompr.files.wordpress.com/2010/02/ipm_guide-pestes.pdf
- National Park Service, *11 Step Process to Developing and Implementing an IPM Strategy* http://www.nature.nps.gov/biology/ipm/Documents/11StepIPMCard111406FrontBack.pdf

Photographs:

- Unbuffered tissue like this from Hollinger Metal Edge: http://bit.ly/YwavqV (item 10778)
- Glass negative storage containers like these from Gaylord: http://bit.ly/WpF60n (item WW-GNB45)
- Information on the deterioration of photographic film bases can be found in NEDCC's Preservation Leaflet 5.1 A Short Guide to Film Base Photographic Materials: Identification, Care, and Duplication
- National Film Preservation Foundation's *The Film Preservation Guide* (free online) for guidelines and templates to use when caring for films.
- NEDCC's Preservation Leaflet 5.5 Storage Enclosures for Photographic Materials
- Glass negatives and slides

    - A brief resource for handling and storage tips: Caring for Glass Plate Negatives.
    - Purpose-built storage containers such as these that are available from Hollinger Metal Edge and Talas.
- Preservation Self-Assessment Program Collection ID Guide for photo and image materials

Policies, Practices, and Forms:

- Accession and processing
    - Guidelines for Reappraisal and Deaccessioning – additional sample policies are found under the heading 'Organizational Repositories" in Appendix E
    - A Guide to Deeds of Gift from the Society of American Archivists
    - Deed of Gift with Language Addressing the Possibility of Deaccession – follow link and see Appendix C for a template
    - Accession Forms: Representative Samples from the Library of Congress
    - National Archives' Fastened Documents
- Access and handling guidelines
    - Typical Usage Guidelines in Archival Repositories from the Society of American Archivists
    - Reproduction and publication guidelines - for example, Image Use Policy and Fees from Forbes Library
    - ACRL/RBMS Guidelines Regarding Security and Theft in Special Collections
    - Notes on Copyright, Restrictions, and Unprocessed Collections from the Society of American Archivists
    - NEDCC Preservation Leaflet 4.1 Storage Methods and Handling Practices
    - Handling videos
        - "Handling Harvard's Special Collections" http://www.youtube.com/watch?v=UOvoSOQ8B68
        - Handling Rare Materials (Folger Library) http://www.youtube.com/watch?v=5NWyruNYILw
- Exhibit policy
    - University of Washington Exhibits Guidelines (example document) - http://www.lib.washington.edu/about/news/exhibits/guidelines
    - NARA – Borrowing NARA Materials - Technical Guidelines (example document) - http://www.archives.gov/exhibits/borrowing/technical-guidelines.html
    - Stanford University Exhibit Loan Policy (example document) - http://library.stanford.edu/spc/exhibitspublications/exhibit-loan-policy

Preservation Education:

- NEDCC's training calendar: https://www.nedcc.org/preservation-training/training-currentlist
- *Preservation 101*, NEDCC's free, online self-guided preservation course https://www.nedcc.org/preservation-training/preservation-101
- *Fundamentals of Audiovisual Preservation*, NEDCC's free, online textbook https://www.nedcc.org/preservation-training/fundamentals-of-av-preservation
- About Archives series from the Society of American Archivists
- NPS's Conserv-o-Gram no. 13/2 How To Flatten Folded Or Rolled Paper Documents
- NEDCC's Preservation Leaflet 7.2 Surface Cleaning of Paper
- NEDCC's Preservation Leaflet 7.7 Choosing and Working with a Conservator

- American Institute of Conservation's online Find a Conservator tool

Staffing and Budget:

- Data about preservation expenditures in collection institutions across the country is captured in A Public Trust at Risk: The Heritage Health Index Report on the State of America's Collections
- Data about preservation expenditures in academic libraries is captured in the Preservation Statistics Survey
- Data about preservation expenditures in institutions that collect American art is captured in The Heritage Health Index Report to the Henry Luce Foundation on the State of American Art Collections

Storage and Identification Guides:

- Preservation Self-Assessment Program (PSAP) Collection ID Guide for audiovisual, paper & book, and photographic & image material

D. Sample Preservation Plan

September 1, 2020-August 31, 2025

Year	Activity	Strategies & Steps	Measures of Progress	Target Date
1	Policy Development	1. Develop mission statement. 2. Start keeping use statistics do determine core use collections	1. Mission statement written 2. Form completed, new procedures instituted	1. March 2. March
1	Develop an infrastructure for preservation	1. Assign responsibility & allocate staff time for preservation activities 2. Add budget line item for preservation	1. Responsibilities assigned, job descriptions amended if necessary 2. Line item approved	1. Nov. 2. June
1	Improve relative humidity in storage areas	1. Set up a schedule to check and empty portable dehumidifiers at a regular intervals 2. Obtain portable fans to help air circulation	1. Schedule created 2. Fans purchased	1. Oct. 2. Dec.
1	Improve light levels	1. Install UV filtering sleeves on all fluorescent lamps 2. Inform Facilities of the filters so they are not accidentally thrown away when lights are changed 3. Box all materials in storage area exposed to sunlight	1. Work completed, noted in maintenance log 2. Memo written and distributed to Facilities. 3. Boxing completed	1. Dec. 2. Dec. 3. June
1	Improve protection from water hazards	1. Set up a monitoring schedule for the foyer to watch for new or recurring leaks. 2. Obtain leak diverters to intercept overhead leaks until the cause of the leak has been repaired. 3. Relocate materials in the foyer to safer storage	1. Schedule and log set up. 2. Leak diverters purchased and in place. 3. Location identified and materials moved.	1. Dec. 2. March 3. June
1	Fire protection	1. Include check on all small appliances in kitchen and staff offices into closing procedures to ensure they are unplugged at night. 2. Initiate regular testing, inspection, and maintenance of fire detection and suppression systems. 3. Include fire detection/suppression system maintenance in building maintenance schedule.	1. Check integrated into closing procedures. 2. Activities scheduled and completed with appropriate vendors. 3. Maintenance written in to overall schedule	1. Nov. 2. Jan. 3. June
1	Disaster preparedness	1. Assemble response kit for water emergencies 2. Conduct risk assessment 3. Begin disaster plan by completing a call tree and	1. Kit assembled 2. Risk assessment completed. 3. Call lists complete	1. March 2. June 3. July

		panic sheet of important individuals and services for disasters as identified by risk assessment		
1	Begin pest monitoring	1. Install sticky traps in the storage areas	1. Traps installed	1. April
1	Improve security	1. Discontinue allowing the public in the Archives storage area. 2. Keep door between general collections and the Archives processing area closed. 3. Compile a list of staff with keys and codes and maintain a log for all subsequent changes.	1. All staff know and comply with new policy. 2. All staff know and comply with new policy. 3. List and log completed.	1. Dec. 2. Dec. 3. March
1	Improve storage and handling	1. Remove cans of spray paint (and other such products) from the Archives storage closet. 2. Turn all books stored on their fore-edges to their spine.	1. Materials gone. 2. All books rotated.	1. Oct. 2. March
1	Continuing efforts	1. Quarterly air filter change 2. Annual inspection of building & systems	1. Change completed 2. Report	1. March, June, Sept. 2. May
2	Policy development	1. Develop written collection development policy	1. Document completed, shared with staff	1. July
1	Pursue grant funding for preservation	1. Identify specific projects 2. Identify potential funding agencies 3. Select grant to pursue and begin information gathering.	1. List of potential projects 2. List of funding agencies 3. Grant narrative begun (if pursuing a larger grant)	1. Feb. 2. March 3. Aug.
2	Improve control of temperature & RH	1. Purchase environmental monitoring equipment 2. Train two staff members to use equipment 3. Begin environmental monitoring of the vault	1. Purchase order cut 2. Equipment installed, staff know how to use 3. Monthly reports	1. Sept. 2. Nov. 3. Dec.
2	Lower risk of water damage	1. Purchase pallets to raised boxed materials off of the floor.	1. Pallets and boxes in place.	1. June
2	Disaster Planning	1. Schedule fire extinguisher training for all staff. 2. Complete full disaster plan	1. Training completed. 2. Plan written	1. March 2. June
2	Improve housekeeping	1. Schedule regular housekeeping in all collections storage rooms.	1. Cleaning scheduled	1. Oct.
2	Improve security	1. Register high-value items with the Art Loss Register™ 2. Prepare call slips to use in requesting materials	1. Items registered 2. Call slips designed and	1. March 2. June

		from the Archives 3. Purchase lockers for patrons to keep bags and other personal belongings in while using the reading room.	printed. 3. Purchase order cut	 3. Aug.
2	Improve handling	1. Prepare written handling guidelines for staff and researchers. 2. Purchase bookends and tidy up books on shelves.	1. Guidelines completed, shared with staff 2. Bookends purchased, books tidy.	1. Oct. 2. July
2	Improve storage	1. Explore options for adding more shelving 2. Purchase storage bins for framed materials. 3. Add or adjust shelves to allow for flat shelving of oversized materials.	1. Vendors contacted, literature & estimates collected 2. Purchase order cut 3. Shelving adjusted and books moved.	1. April 2. Aug. 3. Aug.
2	Improve storage of collections	1. Survey scrapbooks to identify damaged Items for boxing 2. Survey existing folders and boxes and test with a pH-testing pen. 3. Purchase spacer boards for partially-full boxes	1. Prepare list 2. Quality of materials determined and recorded. 3. Purchase order cut	1. Jan. 2. July 3. July
2	Continuing efforts	1. Change sticky traps 2. Update disaster plan emergency contact info. for staff & vendors, as needed 3. Quarterly air filter change 4. Annual inspection of building & systems	1. Change completed 2. Updates completed 3. Change completed 4. Inspection completed	1. Oct., April 2. Feb. 3. March, June, Sept. 4. May
3	Staffing	1. Re-open part-time Collections Assistant position if possible.	1. Review/rewrite of position description complete. 2. Job announcement posted and interviews conducted. 3. Staff hired and begun work.	1. Dec. 2. Jan. – April 3. July
3	Complete grant for	1. Complete grant narrative for preservation project	1. Grant submitted	1. March (or

	preservation			whatever month the grant deadline falls)
3	Improve control of temperature & RH	1. Analyze 12 months' worth of monitoring data to identify extent of seasonal spikes 2. Work with Facilities to research new storage and year-round climate control for the Archives.	1. Report on data written 2. Vendors researched and system selected.	1. Jan. 2. Feb.
3	Disaster Planning	1. Train staff involved in disaster response and recovery techniques	1. Staff trained	1. Aug.
3	Improve storage of collections	1. Place scrapbooks from survey in year 2 in custom phase boxes. 2. Purchase additional flat file unit(s) 3. Begin purchasing replacement folders and boxes for those materials identified in survey in year 2. 4. Rehouse collections	1. Boxes purchased 2. Purchase order cut 3. Purchase order cut 4. Rehousing complete for ordered supplied	1. Dec. 2. April 3. June 4. Aug.
3	Reformatting	1. Create preservation photocopies of newspaper clippings.	1. Copying complete	1. Aug.
3	Continuing efforts	1. Change sticky traps 2. Update disaster plan emergency contact info. for staff & vendors, as needed 3. Quarterly air filter change 4. Annual inspection of building & system 5. Environmental monitoring	1. Change completed 2. Updates completed 3. Change completed 4. Inspection completed 5. Monthly reports	1. Oct., April 2. Feb. 3. March, June, Sept. 4. May 5. Monthly
4	Improve control of temperature & RH	1. Write grant for new storage with climate control system	1. Grant written using information gathered in year 3 and submitted	1. Dec.
4	Lower risk of water damage	1. Relocate restroom	1. Site selected for new restroom 2. Construction of new restroom complete. 3. Old restroom removed and	1. Dec. 2. May 3. June

			water pipes capped.	
4	Improve storage of collections	1. Continue purchasing replacement binders, sleeves, folders, and boxes 2. Rehouse collections	1. Purchase order cut 2. Rehousing completed	1. Sept. 2. Aug.
4	Reformatting	1. Prioritize audiovisual materials for reformatting. 2. Create a pilot project to test vendors and reformatting criteria.	1. List complete 2. Samples sent and vendor and criteria selected.	1. Jan. 2. Aug.
4	Continuing efforts	1. Change sticky traps 2. Update disaster plan emergency contact info. for staff & vendors, as needed 3. Quarterly air filter change 4. Annual inspection of building & systems 5. Environmental monitoring	1. Change completed 2. Updates completed 3. Change completed 4. Inspection completed 5. Monthly reports	1. Oct., April 2. Feb. 3. March, June, Sept. 4. May 5. Monthly
5	Disaster preparedness	1. Thorough review of disaster plan 2. Replenish emergency response supplies that are missing, worn out, or used up	1. Review completed & updates made as needed 2. Kit up-to-date	1. Feb. 2. March
5	Reformatting	1. Begin reformatting audiovisual materials.	1. Materials sent out.	1. Dec.
5	Continuing efforts	1. Change sticky traps 2. Update disaster plan emergency contact info. for staff & vendors, as needed 3. Quarterly air filter change 4. Annual inspection of building & systems 5. Environmental monitoring	1. Change completed 2. Updates completed 3. Change completed 4. Inspection completed 5. Monthly reports	1. Oct., April 2. Feb. 3. March, June, Sept. 4. May 5. Monthly
5	Planning	1. New five-year plan	1. Plan approved	1. August